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NEW YORK CITY TRANSIT AUTHORITY



AUGUST 1978



CORDDRY CARPENTER DIETZ and ZACK
ENGINEERS
NEW YORK

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Mr. John Pavlovich
Principal Project Coordinator
Tri-State Regional Planning Commission
One World Trade Center, 82nd Floor
New York, New York 10048

T-09-0023, TS C260

tudy, NYCTA Southeast Queens Atlantic Branch

we are pleased to the Phase I ia the LIRR Atlantic

of the Atlantic Branch RR <u>versus</u> Route 131-D's ith increased capacity rd track with reverse

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d in this significant

/ truly yours,

PENTER DIETZ AND ZACK

1. Wadsworth
A. WADSWORTH
Partner

EP 8

801

ransmitted nerewith please ting tive copies of the consuments Report for the referenced project. In the near future. However, the Transit Authority concurs with the recomendations of the consultant, and they remain the position of the Transit Authority with regard to construction of this line.

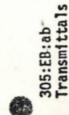
Since to date, the City of New York has not formally responded to a request for comments on the report, the Transit Authority hereby requests the Tri-State Regional Planning Commission to accept the consultant's report as the final document for the project.

UMTA concurrence of this request is solicited, since the consultant's report, in essence, is the Sponsor's Final Report.

Six copies of this report were submitted to Tri-State for information, use, and distribution to UNTA, on November 8, 1978.

Very truly yours,

J. F. CULHANE John F. Culhane Deputy Chief Engineer



CORDDRY CARPENTER DIETZ AND ZACK **ENGINEERS**

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August 15, 1978

NEW YORK OFFICES: WEST SENECA, NEW YORK 14224 PHONE: 716 - 675-2990

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Mr. John T. O'Neill, Executive Officer and Chief Engineer NEW YORK CITY TRANSIT AUTHORITY 370 Jay Street Brooklyn, NY 11201

> Re: Project No. IT-09-0023, TS C260 Phase I Feasibility Study, NYCTA Route 131-D Southeast Queens Line via LIRR Atlantic Branch

Dear Mr. O'Neill:

Pursuant to our Agreement dated November 4, 1974, we are pleased to submit one hundred (100) copies of our report covering the Phase I Technical Study for Route 131-D Southeast Queens Line via the LIRR Atlantic Branch.

This study compares dual occupancy (Alternative 1) of the Atlantic Branch by the NYCTA's proposed Route 131-D and the existing LIRR versus Route 131-D's sole occupancy (Alternative 2) of the Atlantic Branch with increased capacity of the LIRR's Montauk Division by the addition of a third track with reverse signaling.

The results of our study indicate that Alternative 2 is more economical, possesses superior operating and storage characteristics, and provides the needed transportation with less disruption to the community. This Alternative 2 is recommended for construction.

We appreciate the opportunity to have been involved in this significant endeavor.

Very truly yours,

CORDDRY CARPENTER DIETZ AND ZACK

Partner

MAW:gk



New York City Transit Authority Brooklyn, New York

Proposed NYCTA Route 131-D
Southeast Queens Line Via
LIRR Atlantic Branch
Borough Of Queens

PROJECT NO. I T-09-0023 TS C260

Phase I Report

TRANSPORTATION UBRARY

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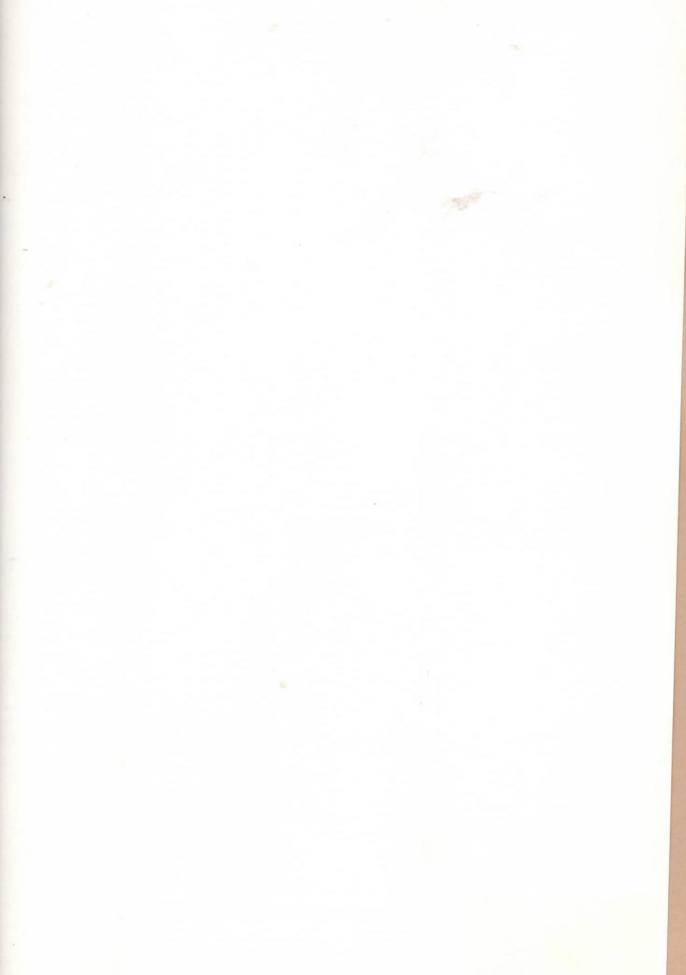
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SUMMARY

CONCLUSIONS & RECOMMENDATIONS

The portion of the New York City Transit Authority's new Route 131-D

designated to occupy the right-of-way of the Long Island Railroad's (LIRR)

#tlantic Branch on embankment required analysis of alternatives. These

alternatives include studies of Alternative 1, dual occupancy of the Atlantic

#ranch from the vicinity of South Road to Springfield Boulevard versus

#Iternative 2, Route 131-D single occupancy of the Atlantic Branch with a

third track constructed along the LIRR's Montauk Division to replace

the LIRR's two tracks on the Atlantic Branch.

These studies were made to determine: the economical alternative magnitude of construction costs, feasible methods of construction, and scheduling of construction --- all compatible with a facility that meets the needs of the people in the area.

A previous Phase I report established the need for a rapid transit

The to this portion of Southeast Queens. This report updates and re
Establishes this need, noting the continued redevelopment of the area; e.g.,

The College campus, and the energies by various groups to update the

The results of these studies are detailed herein in the body of this

The following is a brief summary of conclusions and recommendations:

(1) Southeast Queens, in its renewal of Jamaica and that area

to the proposed NYCTA facility to Springfield Boulevard,

an effective transportation system. This proposed facility, an

transportation mode which links this community with other boroughs

to the proposed NYCTA facility to Springfield Boulevard,

This proposed facility, an

transportation mode which links this community with other boroughs

to the proposed NYCTA facility to Springfield Boulevard,

transportation mode which links this proposed facility, an

transportation mode which links this community with other boroughs

to the proposed NYCTA facility to Springfield Boulevard,



The long-term benefits of the facility are incalculable.

It will greatly alleviate congestion in all transportation modes, reduce travel time, conserve energy and foremost, establish and retain the vitality of the community.

- (2) Alternative 2, single occupancy of the Atlantic Branch by the NYCTA Route 131-D is recommended for construction. This recommendation includes the construction of a third track for the LIRR on their Montauk Division in replacement of the two tracks on the Atlantic Branch.
- (3) The analysis of the alternatives; i.e., of Alternative 1, dual occupancy of the Atlantic Branch by the LIRR and the NYCTA's proposed facility versus Alternative 2, single occupancy by the NYCTA and the construction of a third track for the LIRR on its Montauk Division reveals many advantages for the latter and thus Alternative 2 is recommended for construction. These advantages are:
 - (a) Construction of the NYCTA facility may be constructed free of traffic. Although the third track on the Montauk will be constructed under traffic, the constraints are not as severe when compared to placing two additional tracks on the Atlantic Branch.
 - (b) The existing LIRR alignment will be retained for a major portion of Route 131-D on the Atlantic Branch, thus essentially eliminating the need for property taking.
 - (c) More land is available for storage and utilization of this land is greatly improved. Moreover, operations are materially enhanced over Alternative 1 by more direct access to storage areas. This also results in operating cost savings.



(d) The savings of one alternative over the other is material. The following cost comparison represents present-day approximate construction costs:

Alternative 1 - (Table 4A)

Dual Occupancy of Atlantic Branch by LIRR and NYCTA facility ---- \$147.8 million

Alternative 2 - (Table 4C)

Single Occupancy of Atlantic Branch

by NYCTA and placing Third Track

on Montauk Division ---- \$134.6 million

Estimated Savings \$13.2 million

The above estimated costs do not include the cost of necessary right-of-way acquisition which involves 241 properties for Alternative 1. Under the single occupancy (Alternative 2), 22 properties are involved in necessary right-of-way acquisition.

- (4) Four stations are recommended with the following characteristics:
 - (a) Neighborhood station between 108th Avenue and 109th Avenue. This station essentially services Jamaica Houses, and future residential development. It is a side platform station retaining the existing track alignment with mid-point loading. The projected peakhour patronage for this station is 1200 (walking). It is .7 mile and .6 mile from adjacent stations.



- (b) Linden Boulevard Station is a side platform with midpoint loading and retains existing track alignment. The projected peak-hour patronage for this station is 3800. This includes patronage from feeder busses. It is .6 mile and .9 mile from adjacent stations.
- (c) Baisley Boulevard Station is a side platform station with third point loading and retains existing track alignment. Projected peak-hour patronage for this station is 2750. This patronage comes from adjacent Rochdale Village and feeder busses. It is .9 and 1.1 miles from adjacent stations.
- (d) Springfield Boulevard Station (the Terminal Station) is a center platform station with mid-point loading. The 7100 peak-hour patronage includes patronage from feeder busses from neighboring counties.
- (5) Train storage is recommended between Baisley and Farmers

 Leards (just west of Farmers) on property now owned by the LIRR. This

 Leards (just west of Farmers) on property now owned by the LIRR. This

 LIRR trains a car wash and a car cleaning

 Twenty trains may be stored east of Springfield Boulevard

 LIRR this arrangement, with a connecting

 LIRR track, will provide satisfactory operating characteristics in a very

 LIRR track, will provide satisfactory operating characteristics in a very
- (6) The construction period for constructing the third track on metal Division and completing the NYCTA facility is estimated at



SECTION 1

INTRODUCTION



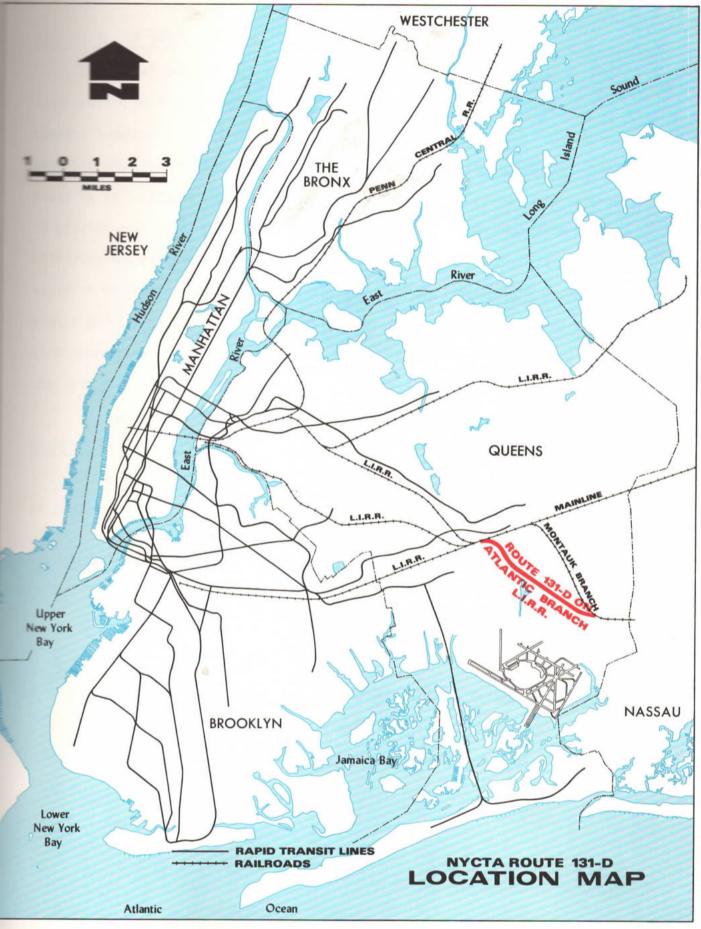
SECTION 1 - INTRODUCTION

HISTORICAL BACKGROUND

The history of this project prior to this study included approval of a new rapid transit railroad route on September 20, 1968 by the New York City Board of Estimate. This route, designated Route 131-D, would traverse Queens from Hillside Avenue under the Van Wyck Expressway to Archer Avenue, then to a terminus at Springfield Boulevard on the Long Island Railroad (LIRR) Atlantic Branch right-of-way. (See FIG. 1-1). By May, 1970, the Engineering Department of the New York City Transit Authority (NYCTA) had completed a Phase I Report on the new route, based upon adding two NYCTA tracks to the existing two-track LIRR Atlantic Branch. Construction of an initial portion of the adjacent new line, designated Section 5, under Archer Avenue and through a portion of South Jamaica to a point east of South Road, was begun in 1973. However, the design of the remainder of Route 131-D along the LIRR Atlantic Branch right-of-way was suspended to consider a new alternative that might prove more cost effective, provide better transit service for the patrons of the NYCTA and LIRR, and minimize impact on the surrounding community.

The new alternative included exclusive use of the Atlantic Branch right-of-way by the NYCTA Rt. 131-D and the shifting of LIRR operations from the Atlantic Branch to the Montauk Branch of the LIRR. In November, 1974, the New York City Transit Authority (NYCTA), acting for the City of New York, retained the consulting firm of Corddry Carpenter Dietz and Zack to perform the Phase I Technical Study and preliminary engineering work that would resolve the feasibility of the new alternative.







PURPOSE OF THE STUDY

This report presents the results of the Phase I Technical Study of the southeastern portion of the Rapid Transit Route 131-D in the Borough of Queens, together with the modifications to the LIRR Atlantic and Montauk Branches required for the construction of Route 131-D. The purpose of this study is to determine the most economically and technically feasible alternative to provide additional rapid transit railroad service to the project area by utilizing the existing LIRR Atlantic Branch right-of-way. In addition, this study is to determine the most feasible method of continuing LIRR operations, either jointly on the Atlantic and Montauk branches, or by relocating all LIRR operations to the Montauk Branch, thereby yielding sole occupancy of the existing LIRR Atlantic Branch to the NYCTA.

SCOPE OF THE STUDY

This study considers two main alternatives and the possible subdivisions of each. The alternatives are:

- Alternative 1. Dual occupancy of the existing LIRR Atlantic Branch right-of-way by a relocated two-track LIRR facility and a proposed two-track NYCTA facility. This was the original alternate considered in the NYCTA Phase I Report of May, 1970.
- Alternative 2. Single occupancy of the existing Atlantic Branch right-of way by the proposed two-track NYCTA facility, and the conversion of the Montauk Branch to a three-track LIRR facility with reverse signaling, handling the combined traffic of the Atlantic and Montauk Branches.



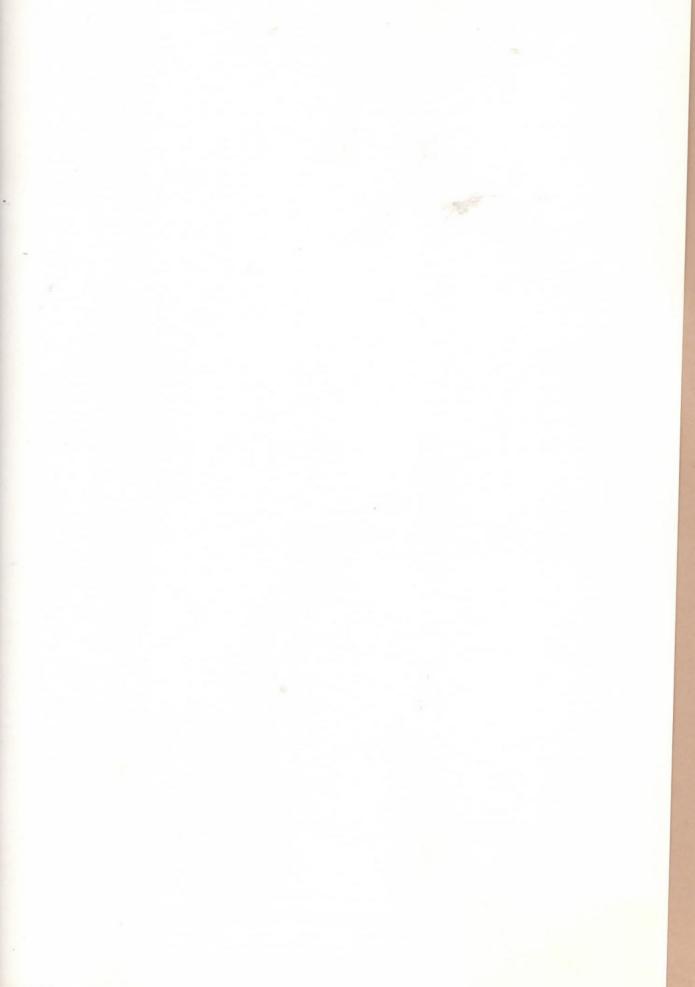
The original NYCTA Route 131-D Alternative 1 has been refined by considering an additional station, train storage, and maintenance areas on the Atlantic Branch. Recommended power, signal, and communications remembers have been prepared for Alternative 1, the joint occupancy alternative.

Various schemes were studied for Alternative 2, single NYCTA occupancy of the Atlantic Branch, to determine the maximum effectiveness and economy of alignment, station locations, and train storage and maintenance areas for Route 131-D on the Atlantic Branch. Various alternates were similarly studied for Alternative 2 on the Montauk Branch to compare alignments and the possibility of providing new passenger stations. An inventory of existing LIRR facilities was prepared and recommendations made for their use or replacement. Cost estimates for trackwork, power, signal, and communications requirements were made by the LIRR for the Montauk Branch and are included in the report. Construction cost, time, and scheduling estimates were prepared for construction on both the Atlantic and Montauk Branches.

Photogrammetric methods and LIRR record drawings were used to create accurate computer plotted drawings to compare design alternates on the Atlantic and Montauk Branches. Operating plans were supplied by the NYCTA for Route 131-D and by the LIRR for the Montauk Branch three-track system alternative. These operating plans were used to develop two alternatives within the Atlantic Branch right-of-way. All work was conducted in close coordination and with the full cooperation of both the NYCTA and the LIRR.

In addition to the above technical considerations, the planning, land use, and socio-economic aspects of the two alternatives were reviewed.

Information regarding this review is contained in the report and specific attention is given to proposed NYCTA station locations. The probable impact



of the technical recommendations on land use and socio-economic structure were assessed for each alternative.

It was not within the scope of this study to determine the operational feasibility of replacing the two existing LIRR tracks on the Atlantic Branch with a third track with reverse signaling on the Montauk. This operational feasibility was established prior to this study by the LIRR.

This study recognizes and presents solutions to the engineering and economic problems associated with the two main alternatives and the possible variations of each. The report describes the project area in detail, presents both alternatives and selects the recommended alternative based on a comparison of the two. The recommended alternative is then presented in detail, emphasizing all aspects of the facility.

In that Route 131-D is primarily an east-west route, the directions east and west as used in this report refer to eastbound and westbound along the route, and not necessarily to the compass directions.



SECTION 2

PROJECT DESCRIPTION



SECTION 2 - PROJECT DESCRIPTION

PROJECT AREA

The Route 131-D project area is located in the southeast portion of law York City's Borough of Queens, within the area commonly referred to as Jamaica. The project is located 10 miles east of Manhattan and 3 miles morth of Kennedy Airport, as shown on Figure 1-1. The neighborhoods of Jamaica, South Jamaica, St. Albans, Springfield Gardens, Laurelton, and Posedale are affected by the project.

A specific study area encompassing the route was defined in southeast

Queens that represents 76 U.S. Census tracts and 1,174 census blocks in a one
mile wide corridor along the railroad lines. The lines considered in the
study include the LIRR Atlantic and Montauk Branches, and portions of the
Mainline and combined Atlantic-Montauk Lines. The study area shown on
Fig. 2-2 (Shaded area) was used in aggregating study data, and in
evaluating the probable effects of the technical alternatives of the project.

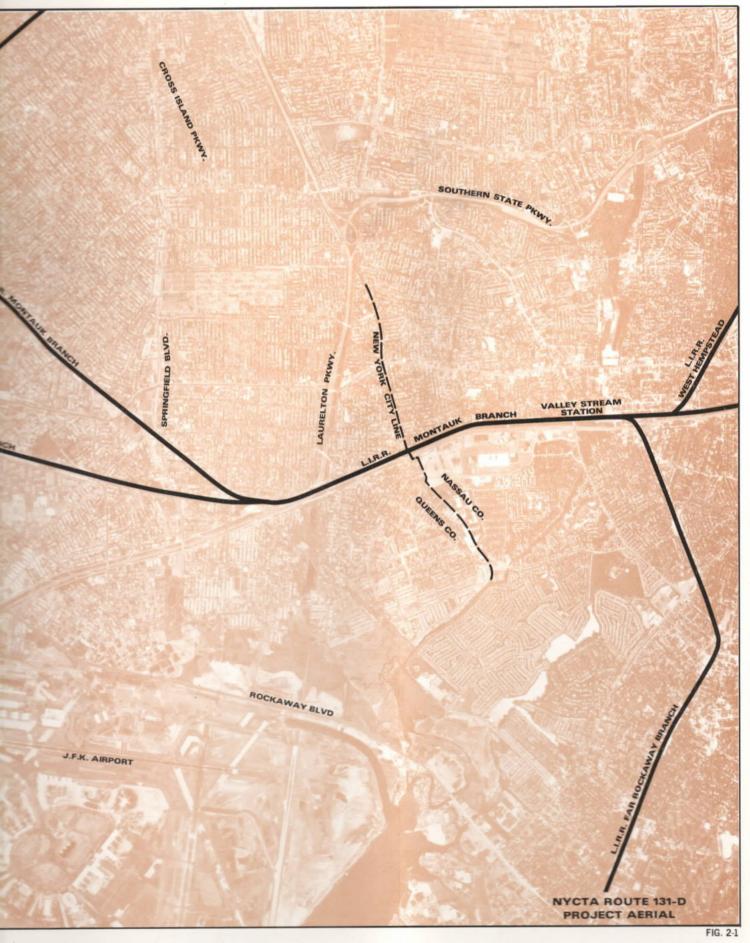
LAND USE PLANNING

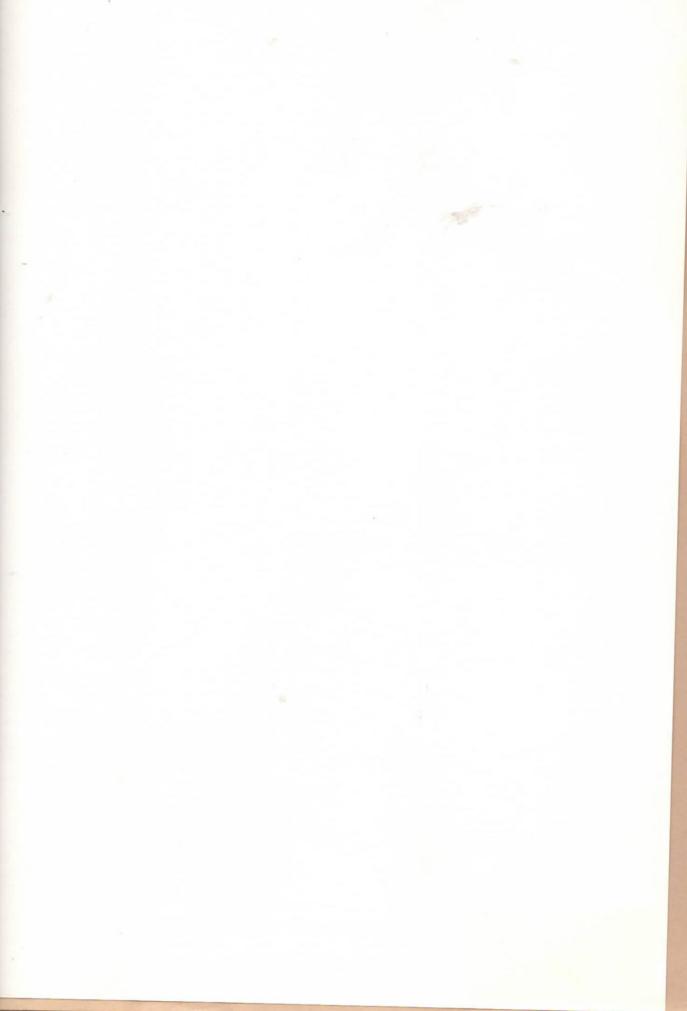
The New York City Planning Department has the primary jurisdiction for land use planning and zoning in the Borough of Queens. Regional planning and A-95 project review for Queens is the responsibility of the Tri-State Regional Planning Commission, formerly the Tri-State Transportation Commission.

For planning purposes, Queens Community Planning District 12 covers all of the Route 131-D study area, except a small portion east of Springfield Boulevard, which is in District 13. In District 12, the Mayor of the City of New York established a special Office of Jamaica Planning and Development in 1969, to facilitate the city's work in the South Jamaica community. This office is charged with the responsibility of working out an overall development



GRAND CENTRAL PRINTY. NEW YORK BLVD. L.I.R.R. MONTAUK BRANCH LAN WYCH EHOWY. SOUTHERN PKWY. ROCKAWAY BLVD. MOODHAVEN BLVO.







and coordinates its activities with numerous agencies and community

These plans affecting the study area were completed between 1969. These plans cover the entire Borough, the South Jamaica and "Jamaica Center." Proposed land use and development for these areas are set forth in the plans, which also include community facilities proposals. The need community facilities proposals. The need community transit service for the area is recognized in the plans, the recommendation that the Atlantic Branch of the Long Island Railroad community increased transit services in Southeast Queens is a set of implement increased transit services in Southeast Queens is a set of implement plans, and in the lambda planaica Community Development Study."

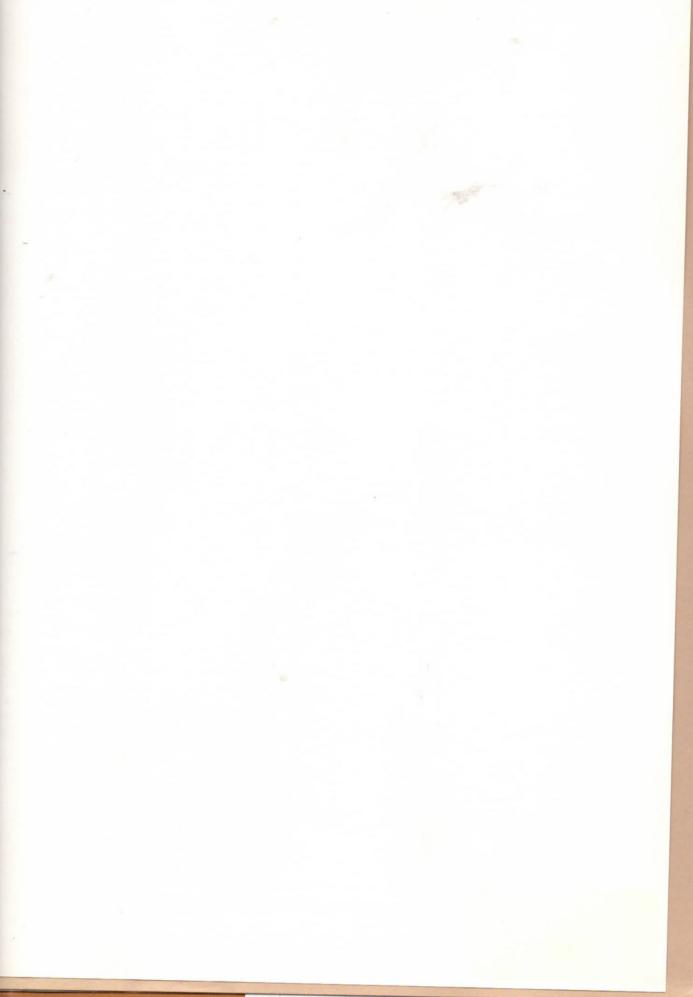
Existing land use in the study area is predominantly residential as on Figure 2-2. Historically, this land use pattern evolved from the extension of a rail terminal at Jamaica in 1832, followed by the extension facilities on Long Island at the turn of the century. Due to excess primarily provided by these facilities, a succession of residential boilding booms resulted that continued throughout Queens and Long Island artill 1940.

During this period, numerous residential subdivisions were constructed containing predominantly one and two-family houses aligned on gridiron street patterns. Concurrently, the area around the Jamaica rail terminal expanded

York City Planning Commission, Plan for New York City - 1969,5: Queens

Development Study, April 1969.

Prepared for Housing and Development Administration of the City of New York



and became the transportation-commercial-industrial center of Queens. These forms of development, therefore, established a rather uniform style of suburban community, of moderate population density, surrounding the urbanized center at Jamaica.

After 1940, development in the study area shifted to the construction of multi-family dwellings. Several mid-rise public housing projects, a middle income development, and numerous multi-family structures somewhat altered the area's earlier suburban image, and increased its population density significantly. The largest multi-family undertaking was the 6,000 unit Rochdale Village cooperative complex that housed an estimated 25,000 persons in 1975.

Although development of the study area was essentially complete by 1964, land uses did not remain static. Commercial uses expanded outside Jamaica along the area's main thoroughfares: Merrick, Sutphin, and Linden Boulevards. Conversions of land to mixed residential-commercial uses also occurred on the boulevards, and on Jamaica Avenue, Liberty Avenue, and South Road. These changes in land uses reflect the pressures for additional space and convenient services created by the area's increased population.

The changing land use pattern also represents the erosion of the residential character and use of many blocks. Since this erosion is apparently continuing, and is shaping the area's emerging land use pattern, its potential effect as a deteriorating and blighting influence should be noted. Traditionally, such conversions of land to mixed uses are a prelude to further conversions, and the eventual deterioration of residential areas. A mixture of undesirable land uses will usually develop which depreciates the original environmental amenities of the area's residential subdivisions. Such mixed uses also tend to further reduce the significance of the community's



commercial center, unless strong action is taken to reverse the trend toward undesirable land use.

The study area's emerging land use pattern is being guided principally by the development policy of the Office of Jamaica Planning and Development.

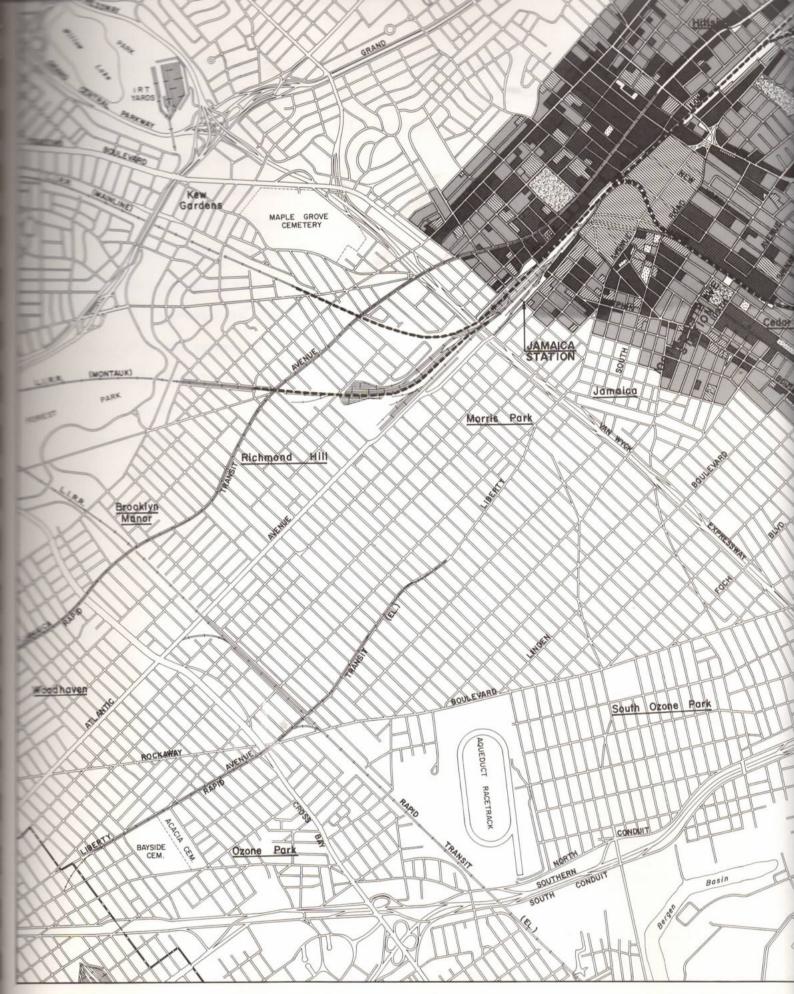
The office has an overall development plan for the area that includes major projects significant to increasing the vitality of Jamaica as the community center of Queens, and increasing the availability of housing units within the study area.

Public facilities projects were selected for implementation in the central Jamaica area which would tend to concentrate the public activities and services once provided by the original city boroughs. These projects include a civil court building, a finance administration building (completed), a family court building (completed), the Queens Community Hospital, and new parking facilities. Also proposed for the central area is a nine-acre retail and commercial office center, an industrial park, an expanded retail center, and a new telephone office building. Presently under construction is the 50-acre York College complex (a four-year liberal arts college).

Outside the central area, two multi-family housing sites have been selected for future development and multi-service center with library and cultural facilities is being planned. It is also planned to propose and tenelop additional facilities as their need is determined through local serving activities.

The merging land use pattern, therefore, is a composite of existing and proceed uses. Proposed uses emphasize public services and commercial and industrial activities that require convenient access if their functions are successful. Existing uses, which reflect past decisions, require access if their functions are to remain successful.

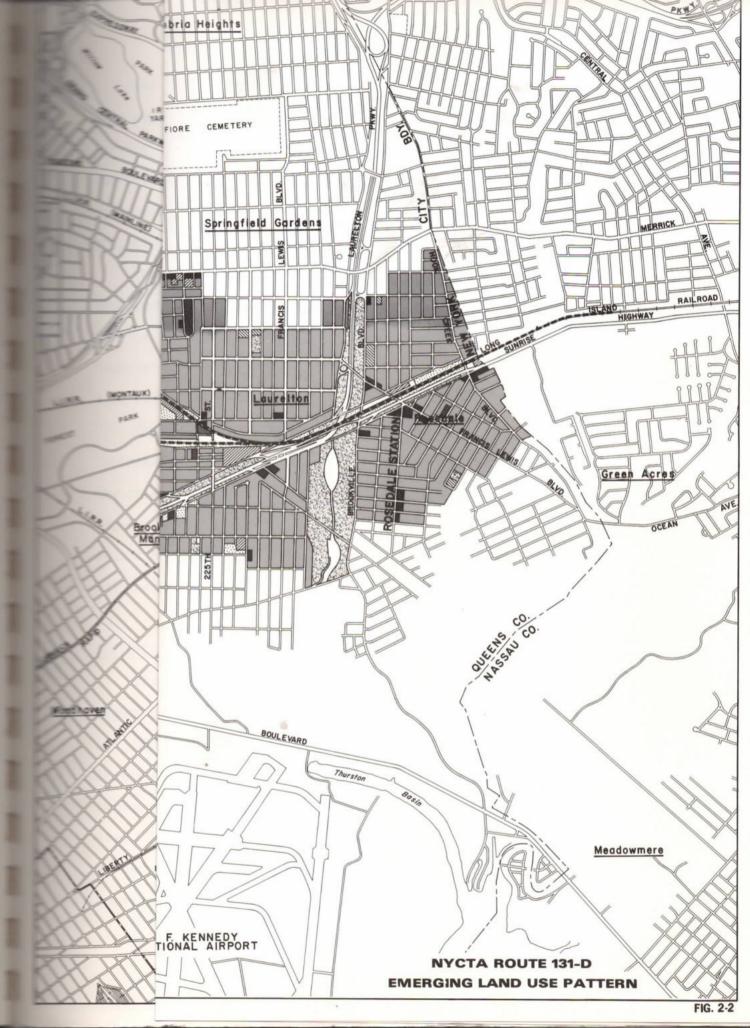


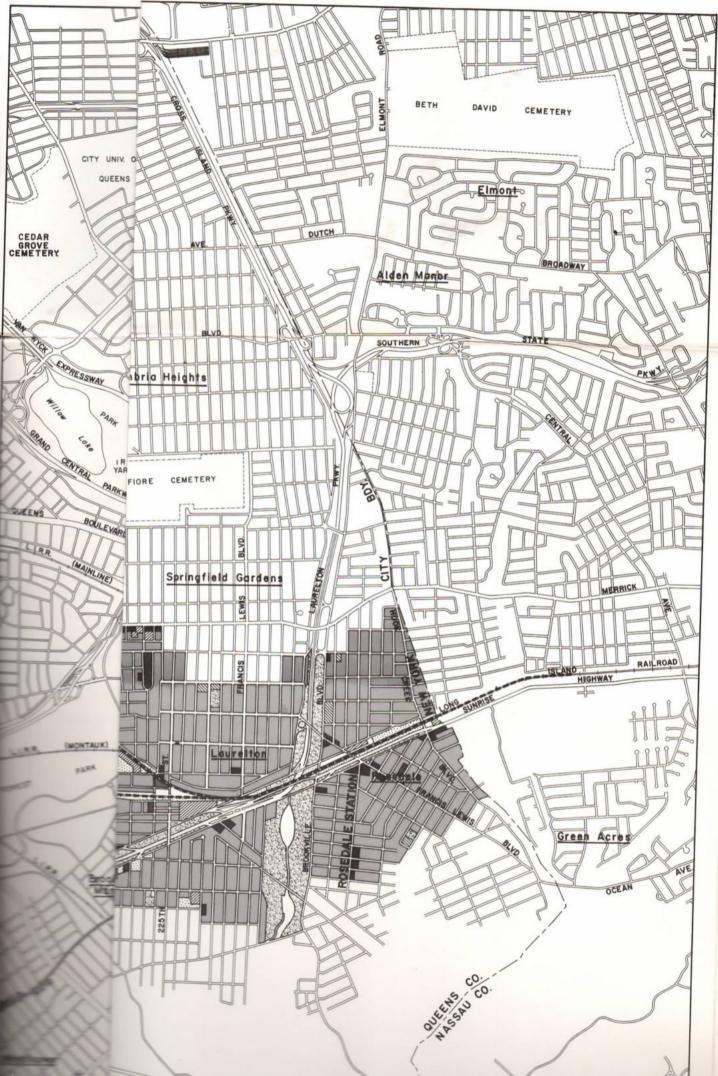


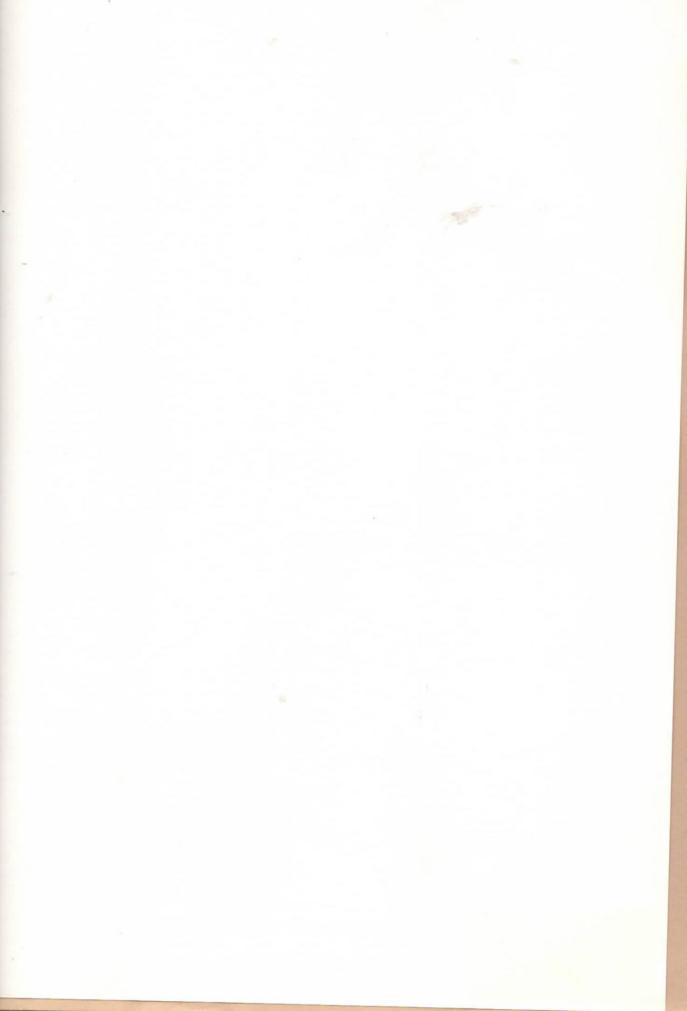














The implementation of the development policies and plans of the study area would be enhanced by providing the area with additional rail transit service. All of the area's currently proposed projects rely upon convenient access in order to effectively serve the community. Additional rail service within the study area would facilitate the use of these projects by area residents.

The feasibility of restraining the erosion of sound residential neighborhoods would also be improved by providing additional rail transit service. Improved and convenient rail transit access to the proposed industrial and commercial facilities in Jamaica would reduce the need to seek such sites in outlying residential areas.

Improved rail transit services and station locations would also enhance implementation of the area's housing policy. Such facilities would enable the area to sustain higher population densities in planned locations, and improve its locational acceptability for commuting workers. These factors should improve the marketability of new housing units, and tend to encourage maintenance and rehabilitation of existing structures.

SOCIO-ECONOMIC BACKGROUND

The project area was previously described and is illustrated on Figure 2-2.

Queens accounts for approximately 25 percent of New York City's population and is the second most populated area in the City. Queens is also the second most populated county in the New York Standard Metropolitan Statistical Area (SMSA). The population of Queens increased by 177,596 persons, or 9.8 percent, from 1,809,578 in 1960 to 1,987,174 in 1970. Of the five counties comprising New York City, Queens experienced the largest population increase



between 1960 and 1970. The following table illustrates the extent of this growth and also shows the magnitude of population growth or decline in each of the areas comprising New York City.

NEW YORK CITY - POPULATION CHANGE

1960 - 1970

	1960 Population	1970 Population	Numerical Change 1960-1970	Percent Change 1960-1970
Bronx County	1,424,815	1,471,701	+ 46,886	+ 3.3
Kings County (Brooklyn)	2,627,319	2,602,012	- 25,307	- 1.0
New York County (Manhattan)	1,698,281	1,539,233	-159,048	- 9.4
Queens County	1,809,578	1,987,174	+177,596	+ 9.8
Richmond County (Staten Island)	221,991	295,443	+ 73,452	+33.1
TOTALS	7,781,984	7,895,563	+113,579	+ 1.46

Source: U. S. Department of Commerce, Bureau of the Census, 1970 Census of Population, "Number of Inhabitants", Final Report PC(1)-A34, New York.

The following section summarizes the pertinent population and socioeconomic data for the project area. The selected data influencing the
feasibility of mass transit reviewed herein includes total population,
households, housing, age, race, employment, income, place of work, and mode
of transportation to work.

Population, Households, and Housing

The 1970 U.S. Census of Population shows a total project area (See Fig. 2-2 shaded area) population of 160,714 persons which represents 8.1 percent of the total population residing in Queens in 1970. The project area population



included 49,453 households with an average of 3.2 persons per household.

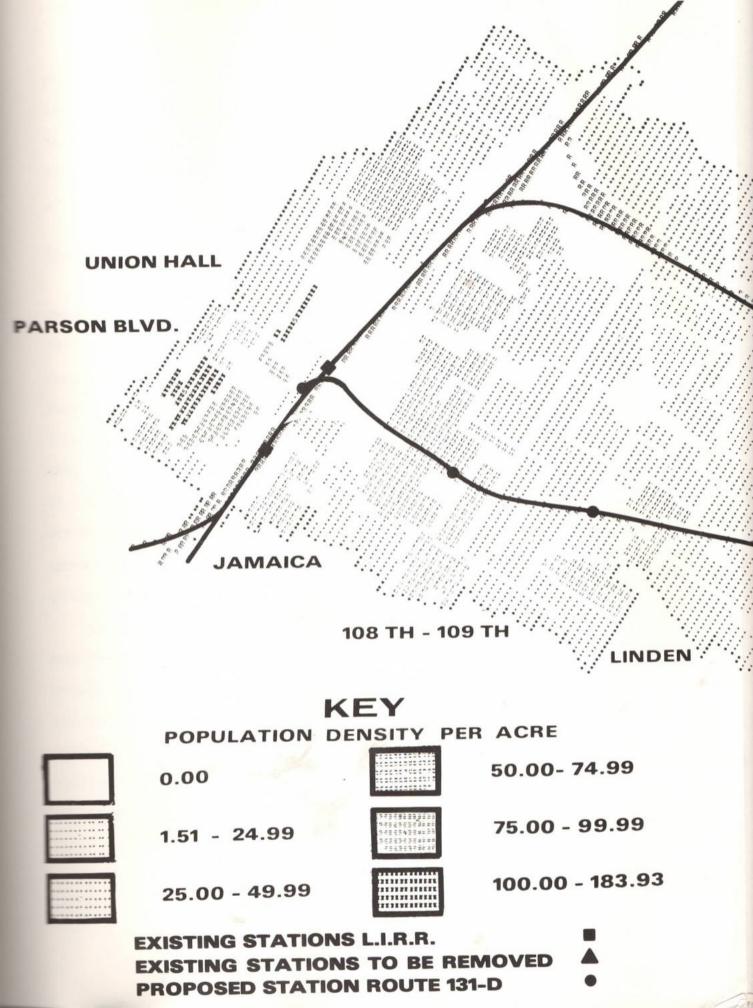
There were 51,680 housing units in the project area in 1970.

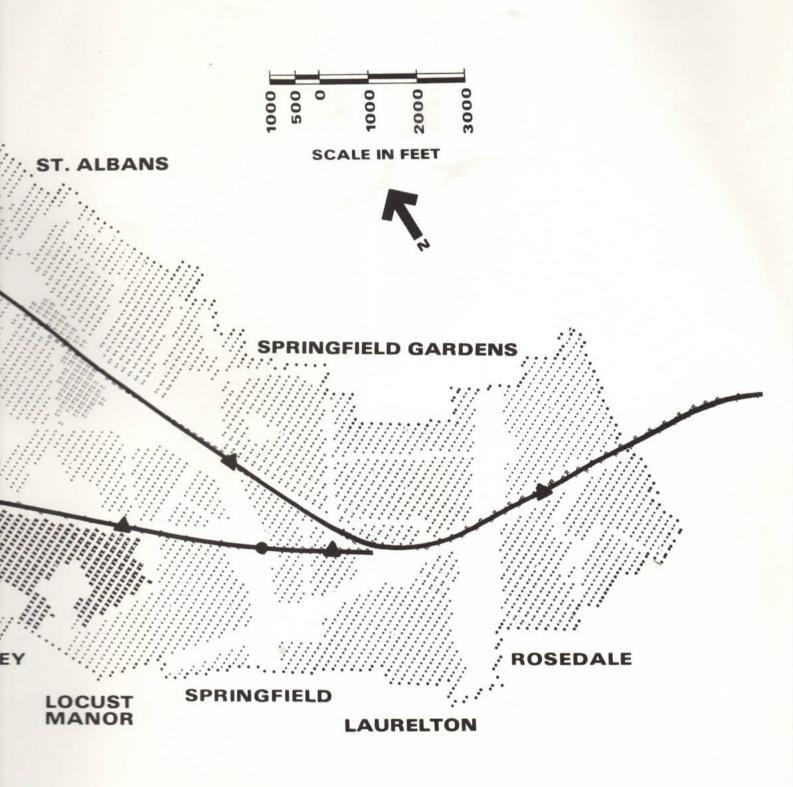
The geographic distribution of the study area's population is illustrated in Fig. 2-3. Major concentrations of the project area's 1970 population, households, and housing units were located in Rochdale Village, Baisley Park Houses, Cedar Manor Co-Op, and Jamaica Houses I and II. The housing units are located within the project area shown in Fig. 2-2. These four concentrations accounted for 22,696 persons, or 14 percent of the project area's 1970 population, and also accounted for 8,172 housing units. Based on information obtained in 1975, these four clusters of housing had a total population of 31,381 persons. The single largest concentration of population in the project area exists in Rochdale Village, which had a 1975 population of approximately 25,000. The second largest concentration exists in Jamaica Houses I and II, which had a 1975 population of 4,100. The Baisley Park Houses and the Cedar Manor Co-Op also had relatively large concentrations of population in 1975 with 1,451 and 830 persons respectively.

All four of these major concentrations of population and housing are located immediately adjacent to the Atlantic Branch of the LIRR. However, mone of these concentrations are provided with direct rail transit service wia conveniently located transit stations.

Age

The 1970 average age in the project area was 33.1 years, which indicates that the population in the project area is slightly younger than the overall population of Queens, which had an average age in 1970 of 36.3 pears. Approximately 32.9 percent of the project area's 1970 population was under 18 years of age, while persons under 18 in Queens amounted to 25.2 percent of the total Queens population. About 13.3 percent of the





NYCTA ROUTE 131-D POPULATION DENSITY



project area's 1970 population was 62 years old and over, while a slightly larger proportion, 15.9 percent, of the population in Queens fell into this age grouping. The major concentration of the elderly (persons over 62) appears to live in the older Jamaica center in the northern portion of the study area.

Race

Based on 1970 U. S. Census Bureau reports, a majority (57.7 percent) of the project area's 1970 population was "non-white." This represents a total 1970 non-white population of 92,728 persons out of total project area population of 160,714 persons. Ninety-eight percent of the non-white population in the project area were Negro (90,984 persons), while only 2 percent (1,834 persons) were of other races. It is significant to note that in 1970 the non-white population in the project area accounted for 31.8 percent of the total non-white population in Queens. While 85.3 percent of the population in Queens were white and 14.7 percent were non-white, figures for the study area were 42.3 percent white and 57.7 percent non-white.

In general, larger concentrations of non-whites exist in the northern,

more densely populated portion of the study area. Moving south and east

mough the project area toward Nassau County, the proportion of non-whites

meetines. The single largest concentration of non-whites in the project area

meets to exist in the area of the Jamaica Houses I and II. The geographic

method in the study area's non-white population is illustrated on



Employment

The total 1970 civilian labor force in the project area amounted to 86,095 persons. Of this total, 82,782 were employed and 3,313, or 3.85 percent, were unemployed. Considering current national employment trends, it is logical to assume that unemployment in the project area is higher. The geographic distribution of the study area's civilian labor force is shown on Table 2-A.

It should be noted that the four areas of Jamaica Houses I and II, Rochdale Village, Cedar Manor Co-Op, and Baisley Park Houses accounted for 14 percent of the project area's 1970 unemployment. No other significantly high concentrations of unemployment were derived from the U.S. Census data for the project area.

Income

Average family income in the project area was \$11,494 in 1970. There were approximately 4,409 families in the project area classified by the U. S. Bureau of the Census as having incomes "below the poverty level." This amounted to 8.6 percent of the total families in the project area. In 1970, concentrations of families "below the poverty level" existed in the western portion of the project area, particularly in the area of Jamaica Houses I and II. Moving south and east out of the project area toward Nassau County, the proportion of poverty level families declines. For example, in the area of 108th and 109th Avenues, 20 percent of the families had incomes below the poverty level, while less than 4 percent of the families in the Rosedale area had poverty level incomes. It should also be noted that the Rosedale area contained the largest concentration of high income families in the project area in 1970.



family income in the project area is shown on Table 2-A, and a shown of families with incomes below the poverty level is shown

The average poverty threshold for a non-farm family of four

The average poverty threshold also be noted that poverty thresholds

a male was \$3,745. It should also be noted that poverty thresholds

computed on a national basis only. No attempt was made to adjust these

mesholds for regional, state, or other local variations in the cost of

living (except for the farm-nonfarm differential described above)."

Place of Work

Based on information from the 1970 U. S. Census, it has been estimated that 36.7 percent of the work trips originating in the project area had destinations in Queens, 30.2 percent had destinations in Manhattan, 9.5 percent went to work in Brooklyn, and 2.8 percent worked elsewhere in New York City. Almost 80 percent of the work trips originating in the project area had destinations in New York City. Of those who traveled outside the city to work, 5,018 went to work in nearby Nassau County.

Detailed data on place of work is shown in Table 2A.

Mode of Transportation to Work

The data of the 1970 census reveals that public transit was the dominant mode of transportation utilized by workers from the study area in making their work trips. Approximately 54.8 percent of the workers used some form of public transit, 37.7 percent relied upon private automobiles, 5.8 percent walked to work, 16 percent traveled by other means, and 1.1 percent worked



SUMMARY - POPULATION AND SOCIOECONOMIC DATA

				SERVICE AR	EA (1/2 MI.	SERVICE AREA (1/2 MI.) OF STATIONS	
DATA CATEGORIES	QUEENS	PROJECT AREA*	AVE. STATION	LINDEN BLVD. STATION	BAISLEY BLVD. STATION	SPRINGFIELD BLVD. STATION	ROSEDALE
4. PLACE OF WORK DATA:							
PERCENT - NEW YORK CITY	81.9	79.2	78.4	78.3	80.9	80.8	9 9 2
PERCENT - NASSAU COUNTY	4.7	6.2	6.8	6.3	5.1	, ro	8.5
PERCENT - REMAINDER SMSA**	+	1.4	± .	→	.5	0 6.0	3: -
PERCENT - OUTSIDE OF SMSA**	3.5	2.3	6.1	6.	3.6	6.0	00
PERCENT - PLACE OF WORK UNREPORTED	8.5	6.01	11.5	12.1	6.0		6 9
5. MODE OF TRANSPORTATION TO WORK:							
PERCENT - PRIVATE AUTOMOBILE	36.4	37.7	35.5	90	30 7	11.5.3	0 93
PERCENT - BUS OR TAXI	12.4	18.3	28.4	26.9	6.61	42.3	8.00
PERCENT - SUBWAY OR ELEVATED	11.2 E	34.2	26.5	28.4	33.0	29.3	5 2
PERCENT - RAILROAD	2	2.3	1.3	6.0	.5	±,3	10.3
PERCENT - WALK TO WORK	₩.9	5.8	5.2	3.9	5.5		0 4
PERCENT - OTHER MEANS	Ξ	9.0	3	0.1	0.5	0.4	0 -
PERCENT - WORK AT HOME	1.2	-:	8	9.0	9.0	0.	0: -
* Project Area consists of the area within a one-half mile perimeter of the Long Island Railroad's Mainline, Montauk Branch and Atlantic	in a one-half m	ile perimeter of t	he Long Island Rai	lroad's Main	line, Montauk	Branch and Atlant	

Branch; extending from the L.I.R.R. Jamaica Station to the New York City Boundry Line.

All Queens County data was obtained from: U.S. Department of Commerce, Bureau of the Census, Census of Population and Housing: 1970 Census Tracts, Final Report PHC (1)-145, New York, N.Y. SMSA, Parts I, 2 and 3. All other data for catagories I and 2 were obtained from: U.S. Department of Commerce, Bureau of the Census, 1970 Census Summary Tapes - 3rd Count Block Statistics, New York, N.Y. SMSA; and upgraded North - eastern New Jersey Urbanized Area, Part I - New York (ity. All other data for categories 3. 4 and 5 were obtained from: U.S. Department of Commerce, Bureau of the Census, Summary Tapes - 4th Count Population, File A, Census Tracts, New York, N.Y. SMSA, and based on 5% and 15% sampling. Source:

^{**} SMSA - Standard Metropoliton Statistical Area.



Of the 54.8 percent using public transit, 36.5 percent used some transit, and 18.3 percent used buses or taxis.

PROJECT AREA TRANSPORTATION FACILITIES

Route 131-D (corridor) is shown on Fig. 2-5. The corridor contains

**Elastic and Montauk Branches of the LIRR and the LIRR Mainline that

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All branches of the LIRR serving Long Island converge at the LIRR

Station, which is located four blocks east of the Van Wyck

Expressway adjacent to Archer Avenue. East of Jamaica Station, the LIRR

Milantic Branch separates from the Mainline through the Old Southern Under
crossing and proceeds southeastward past York College on a structure

referred to as the Old Southern Viaduct. After passing over South Road,

the two Atlantic Branch tracks continue on embankment to Sunrise Highway.

The Montauk Branch leaves the Mainline on the Jamaica Viaduct and curves

southeast to Liberty Avenue, where the two tracks continue on embankment to

a confluence with the Atlantic Branch tracks along Sunrise Highway east

of the existing Laurelton Station. This combined four track system continues

east past City Line and separates into the West Hempstead, Montauk, and

Far Rockaway Branches just east of Valley Stream Station.

The LIRR presently maintains passenger service in the project area on the Mainline, Atlantic Branch, and Montauk Branch. LIRR Mainline stations within the project area include Jamaica Station and Union Hall Street Station. Jamaica Station is the focal point for passenger traffic between New York City and Long Island. The LIRR has estimated that 75,000 passengers



through Jamaica Station during every morning rush period. The Union

Street Station presently has a very low patronage.

Two stations are located on the Montauk Branch of the LIRR, one at St. Albans (along Linden Blvd.) and one at Springfield Gardens (along Springfield Blvd.). Patronage is very low along this branch; peak three-bour westbound patronage was 87 at St. Albans and 8 at Springfield Gardens as of May 1973.

Existing stations on the Atlantic Branch are located at Locust Manor (Farmers Blvd.) and Laurelton (225th Street). The peak three-hour patronage for these stations as of May 1973 were 199 and 245, respectively. Rosedale Station, which is located east of the confluence of the Atlantic and Montauk Branches, has a peak three-hour patronage of 1,080. The LIRR is presently maintaining freight and passenger service on the Montauk Branch and passenger service on the Atlantic Branch.

Major traffic routes that intersect the project area include Liberty

Avenue, Linden Boulevard, New York Boulevard, Baisley Boulevard, Farmers

Boulevard and Springfield Boulevard. Major routes that parallel Route 131-D

include Sutphin Boulevard and Merrick Boulevard. These arteries connect

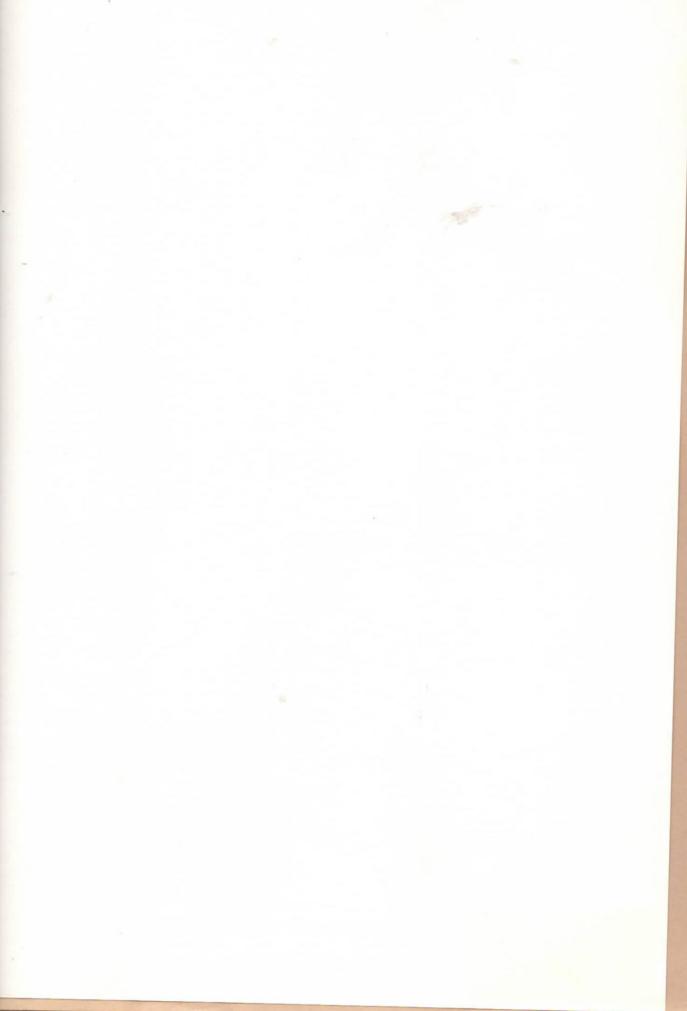
major highways such as the Van Wyck Expressway, the Cross Island Parkway,

the Laurelton Parkway, the Southern Parkway, and North and South Conduit

Avenues. East-West traffic movement is restricted to major streets because

many streets terminate at the LIRR Atlantic and Montauk Branch embankments.

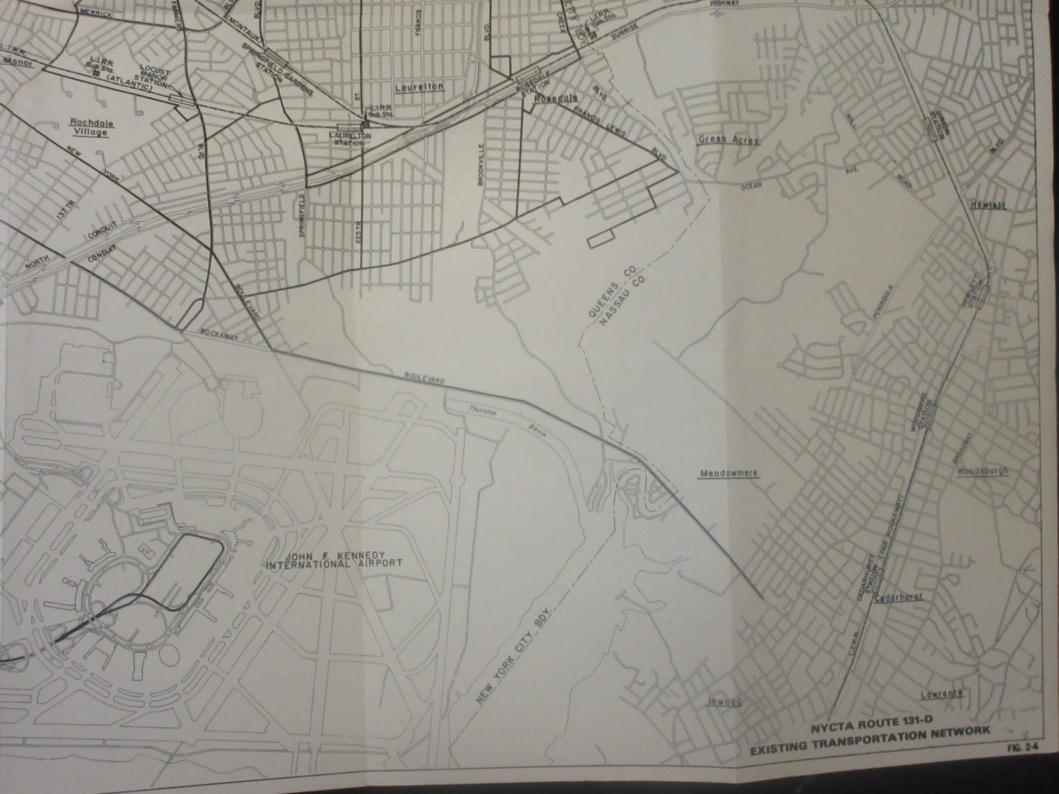
The existing bus routes are shown on Fig. 2-4. The area is adequately served. Coordination of present bus service to the stations and the establishment of feeder bus service to the terminal station is mandatory for optimum service.















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Route 131-D begins as an underground route at its intersection with

Decems Boulevard IND Line north of Hillside Avenue and the Van Wyck

Expressway, and proceeds south along the westerly service road under the

Tan Wyck Expressway to Archer Avenue. The connection to the Queens Boulevard

Line will be made at an existing bellmouth which was previously provided.

The Route proceeds south as a two-track system and curves easterly under

Archer Avenue. At 138th Place, Route 133 intersects Route 131-D and the

system becomes a bi-level, four-track structure below Archer Avenue to

159th Street, where the two lower tracks terminate and the two upper tracks

curve southeast below York College. After passing under South Road, the two

tracks surface within the LIRR Atlantic Branch right-of-way through a portal.

The proposed Route 131-D tracks then continue along the Atlantic Branch

embankment to their proposed terminus at Springfield Boulevard.

The section of Route 131-D studied in this report begins east of South Road as a cut and cover subway. The two NYCTA tracks emerge onto the existing LIRR Atlantic Branch embankment through a portal, and continue east on the existing embankment for the remainder of the Route. This existing embankment is approximately 15 feet in height with 1 1/2:1 side slopes. Existing retaining walls have been constructed to keep the



embankment within the right-of-way in various locations. Existing grade separation structures along the Atlantic Branch are located at 108th Avenue, 109th Avenue, Brinkerhoff Avenue, 111th Avenue, Linden Boulevard, New York Boulevard, Foch Boulevard, Baisley Boulevard, Farmers Boulevard, 140th Avenue, springfield Boulevard, 224th Street and 225th Street. There are presently two LIRR tracks maintained on this branch. Existing LIRR passenger stations are located at Locust Manor and Laurelton (see Existing Project Area Transportation Facilities). These existing stations are platform type stations with no fare control areas. Patrons have free access to train areas from existing streets below and fares are collected on-board the train. Figures 2-6 and 2-7 show photographs of the existing Atlantic Branch facilities. These photographs are located on the plan of the route shown. The proposed station locations (See SECTION 3) are also shown on the plans in these figures.

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The Montauk Branch of the LIRR, which is studied in Alternative 2, is similar in construction to the Atlantic Branch. The entire existing two-track branch east of the Jamaica Viaduct is constructed on free-standing or retained embankment. Grade separation structures are found at Linden Boulevard, Baisley Boulevard, 120th Avenue, Farmers Boulevard, Merrick Boulevard, 219th Street, Springfield Boulevard, 141st Avenue, 225th Street, and North Conduit Avenue. Existing platform stations are located at St. Albans, Springfield Gardens, and Rosedale. Figures 2-8, 2-9, and 2-10 show photographs of the existing Montauk Branch.

The existing land use and the socio-economic make-up of the project area community has been discussed. The area is primarily residential, with many existing and planned multiple residences. Existing transit facilities consist of the LIRR and four bus companies.

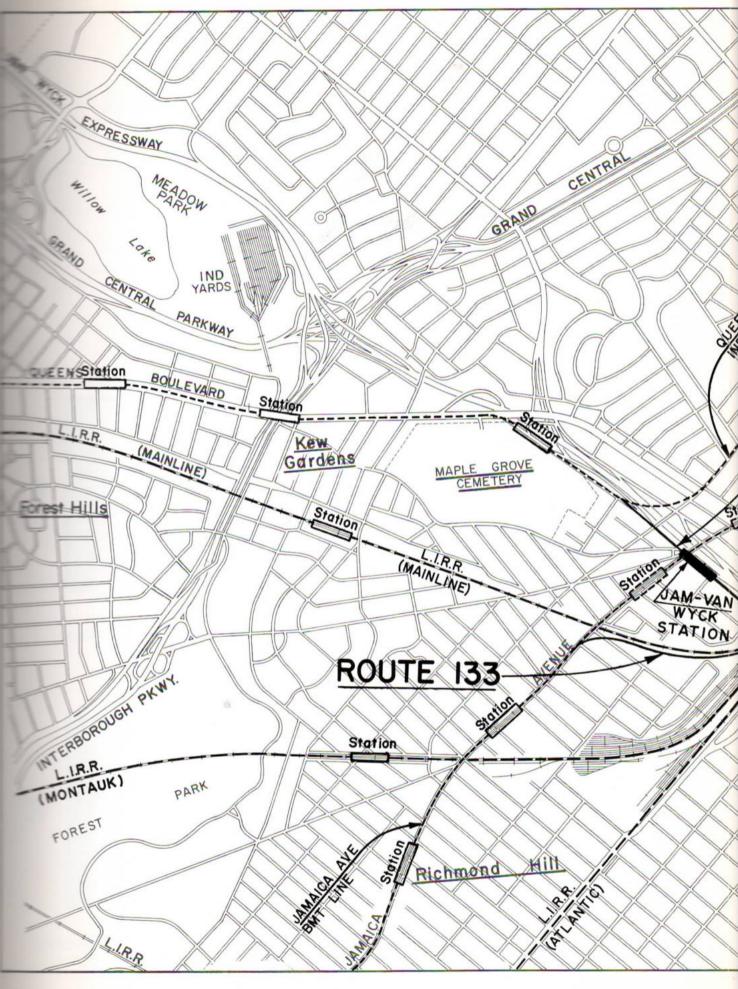


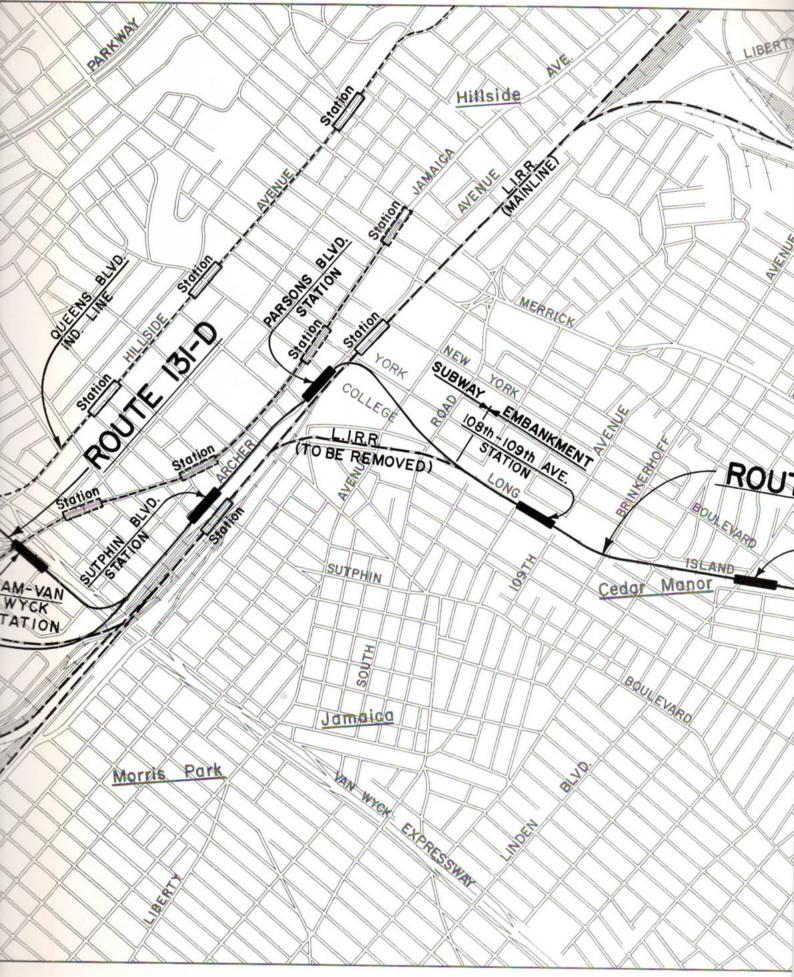
Major concentrations of population exist within the project area which are not currently provided with direct rail transit service to widespread areas via conveniently located transit stations. Comparing these concentrations to the project area as a whole, the concentrated areas appear to have higher proportions of non-whites, lower incomes, higher unemployment, more elderly persons, and large civilian labor forces. It is recommended that convenient rail transit service be provided to serve these areas in order to improve the mobility of the population and to improve accessibility from these areas to major local and metropolitan economic and cultural activity areas.

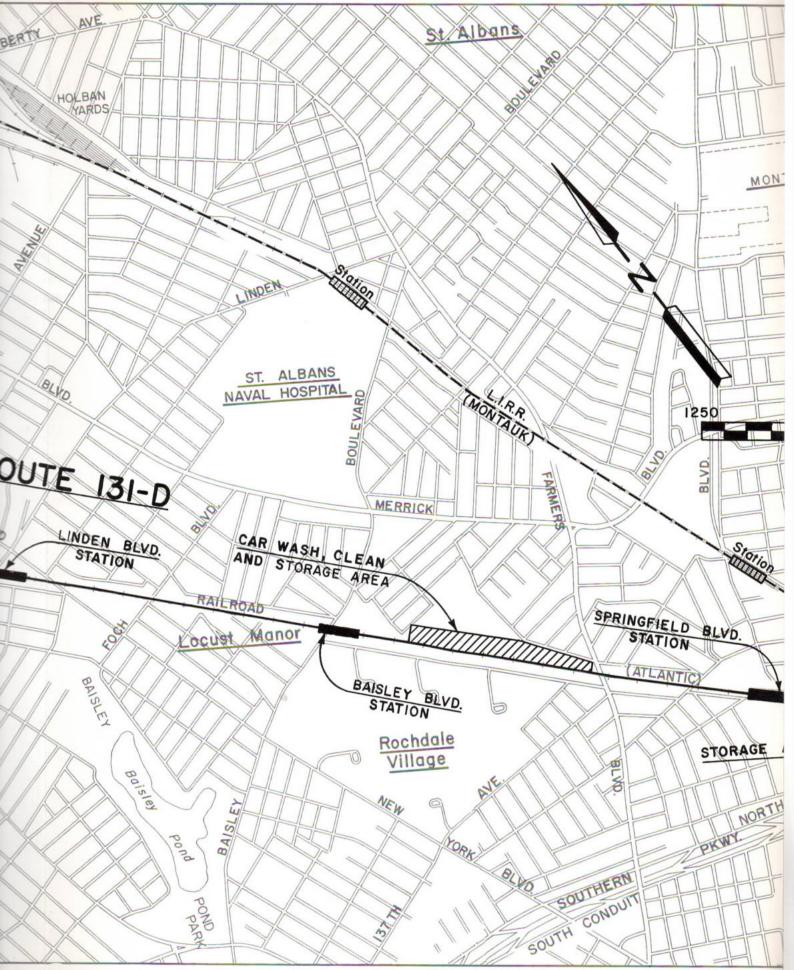
Existing transportation facilities in the project area are not adequate. The LIRR service presently provided is not used as evidenced by the low patronage figures. The LIRR does not offer the flexibility of widespread travel to many different areas of New York City without transfer to a different mode of travel or another transportation system. Often double and even triple fares are presently required for people within the project area to reach their intended destinations.

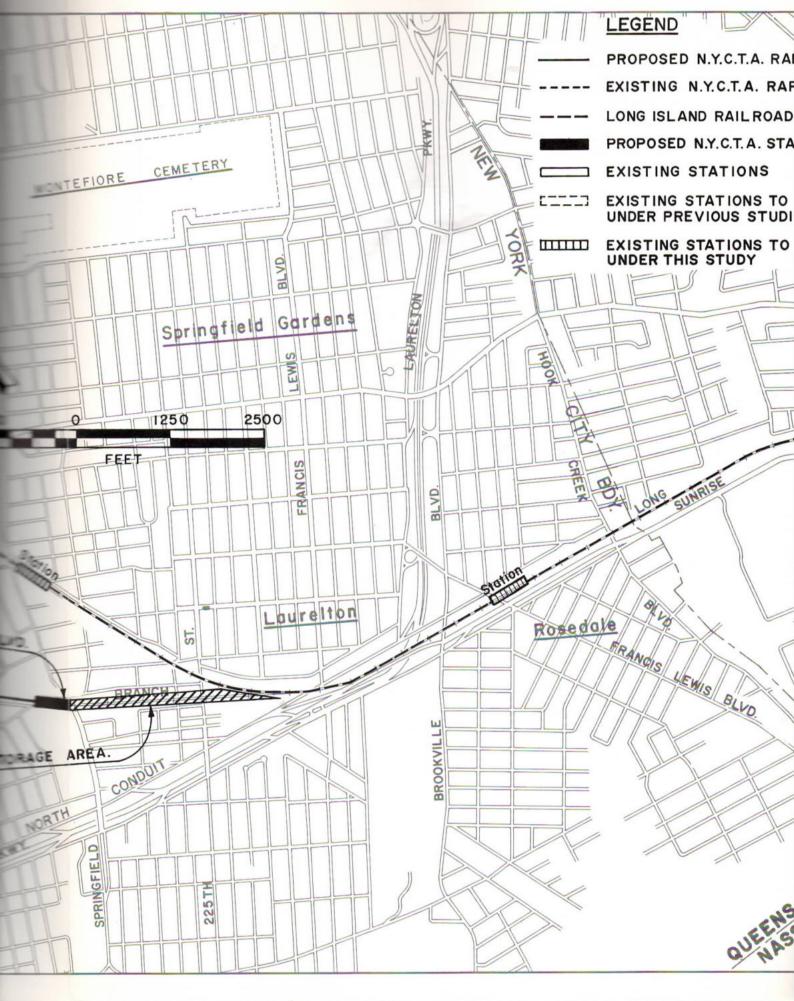
Therefore, there is a definite need for the construction of the proposed Section 6 of Route 131-D which will offer a single fare system to far-flung areas of the city. The socio-economic and transit factors have been discussed. In addition to these, it is important to note that all of the current planning for the Jamaica area presupposes the construction of an NYCTA facility in the overall development program.

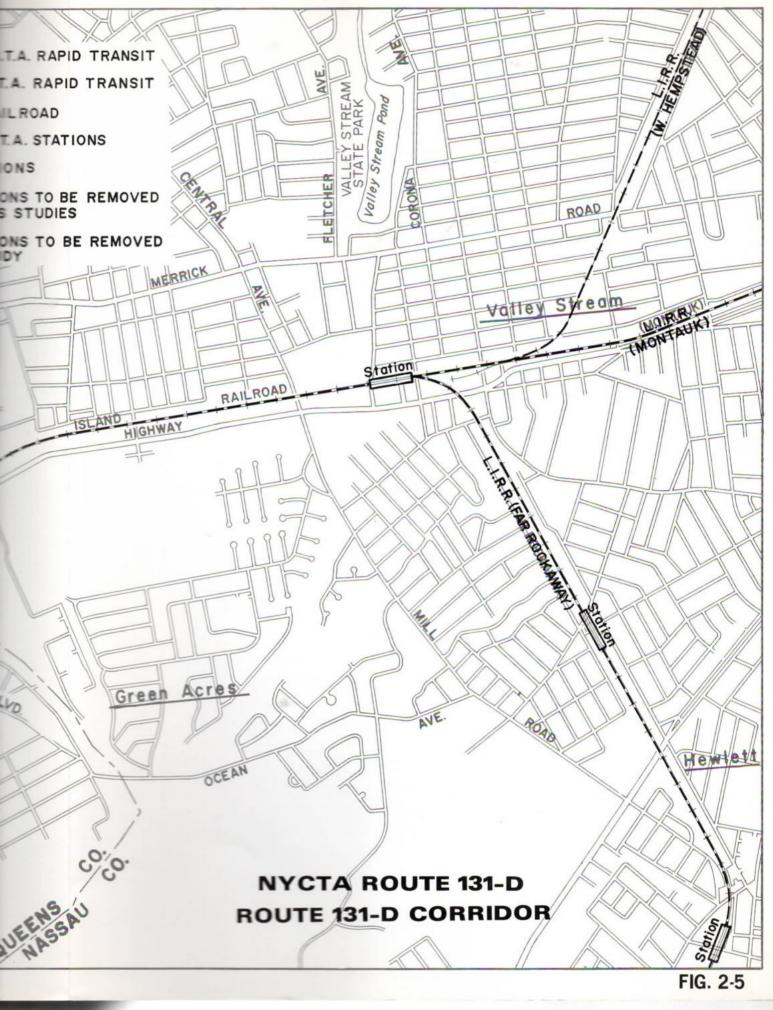


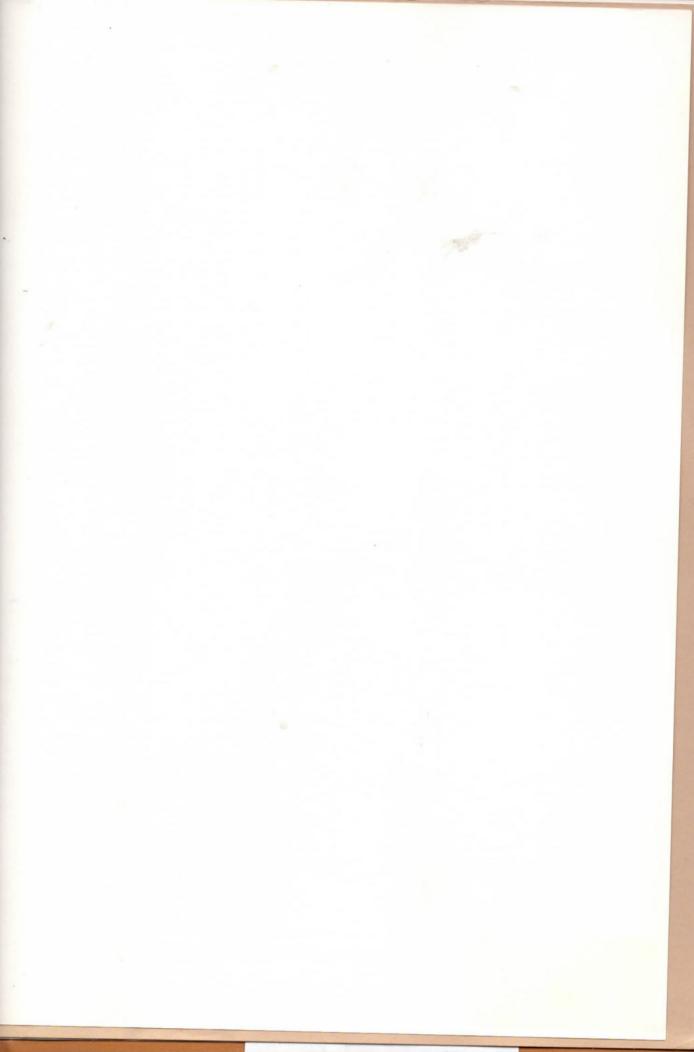


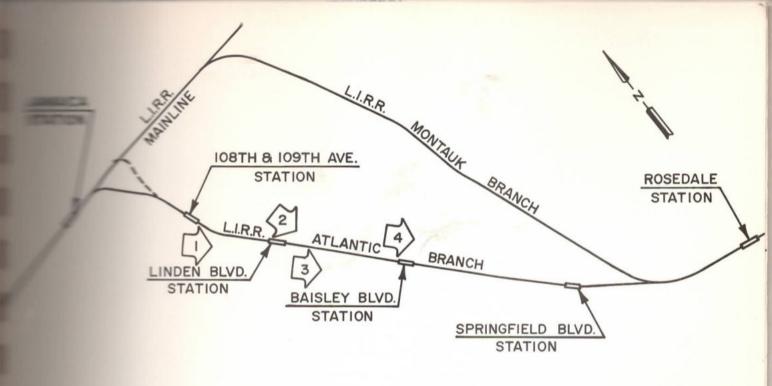


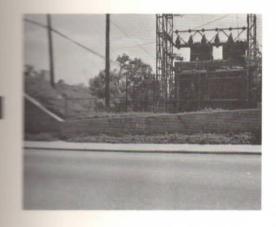












SUBSTATION AT BRINKERHOFF AVE.



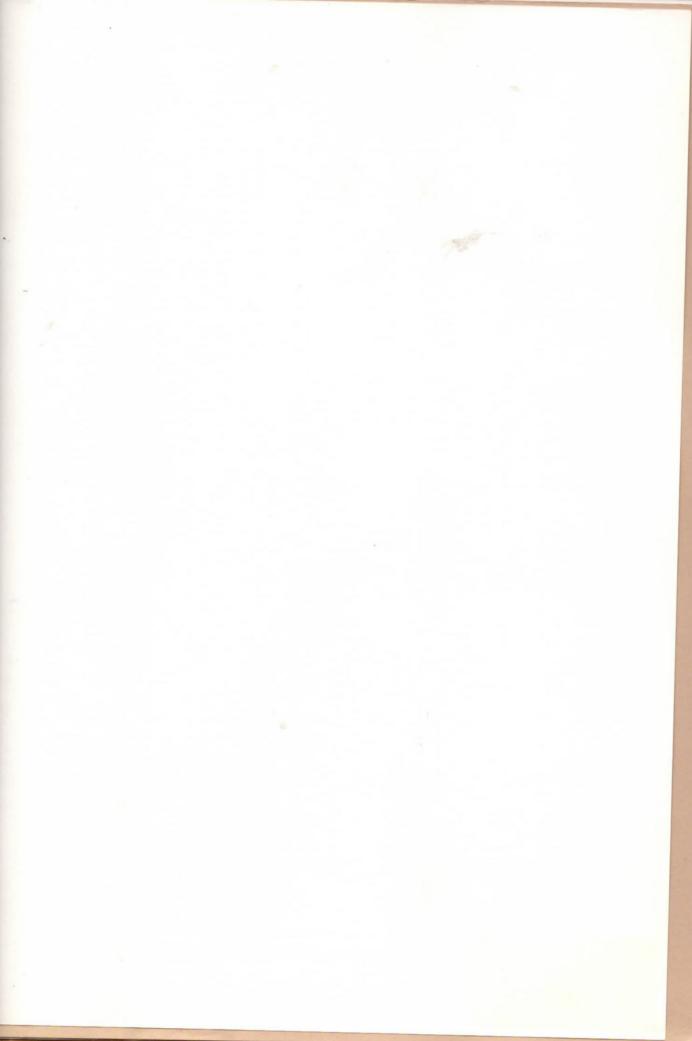
LOOKING EAST ACROSS LINDEN BLVD.

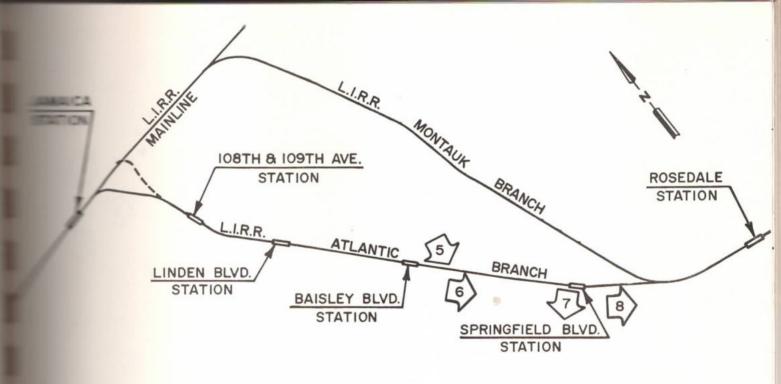


TOWARD BAISLEY PARK HOUSES



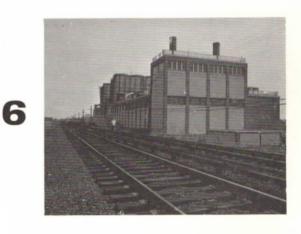
LOOKING EAST ACROSS BAISLEY BLVD.







LOOKING SOUTH ACROSS L.I.R.R.
TOWARD ROCHDALE VILLAGE

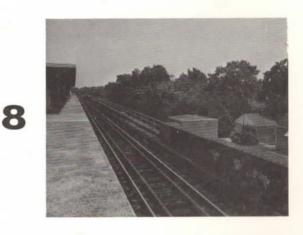


LOOKING EAST ALONG L.I.R.R. AT ROCHDALE VILLAGE POWER PLANT



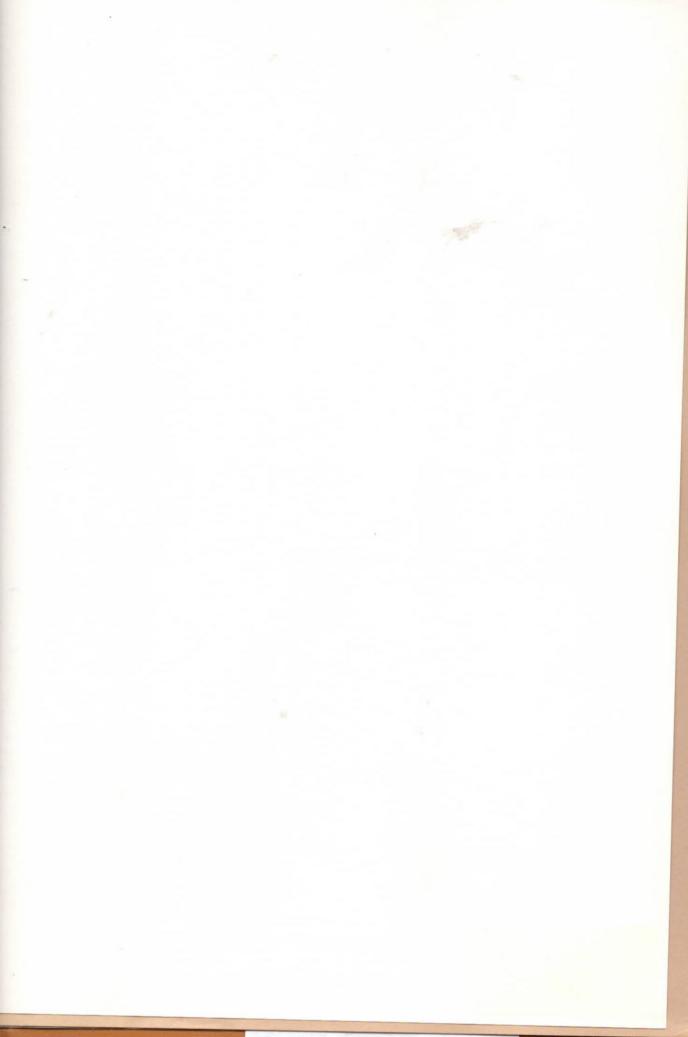
LOOKING SOUTH FROM L.I.R.R. TOWARD

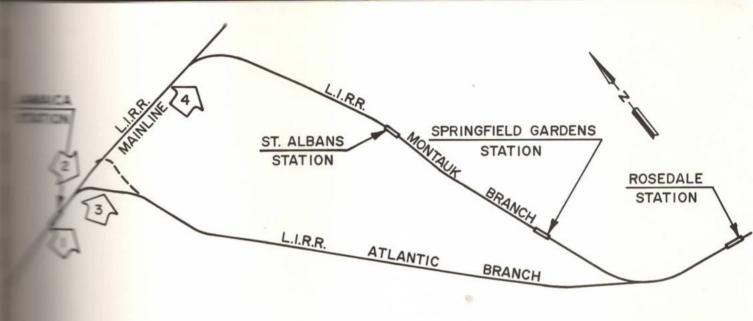
SOUTHEAST QUEEN'S H.S. ON SPRINGFIELD BLVD.



LOOKING EAST ALONG L.I.R.R.
AT LAURELTON STATION

FIG. 2-7







LOOKING EAST ALONG L.I.R.R.
MAINLINE FROM JAMAICA STATION



LOOKING EAST ALONG OLD SOUTHERN VIADUCT

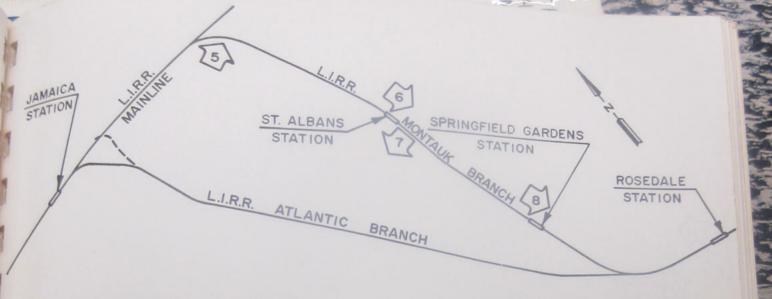


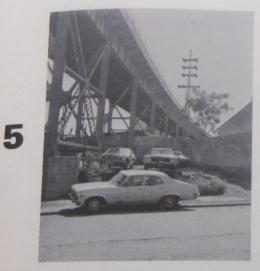
LIBERTY AVE.



L.I.R.R. MAINLINE LOOKING EAST TOWARD JAMAICA VIADUCT







LOOKING EAST ACROSS 177TH ST. AT JAMAICA VIADUCT



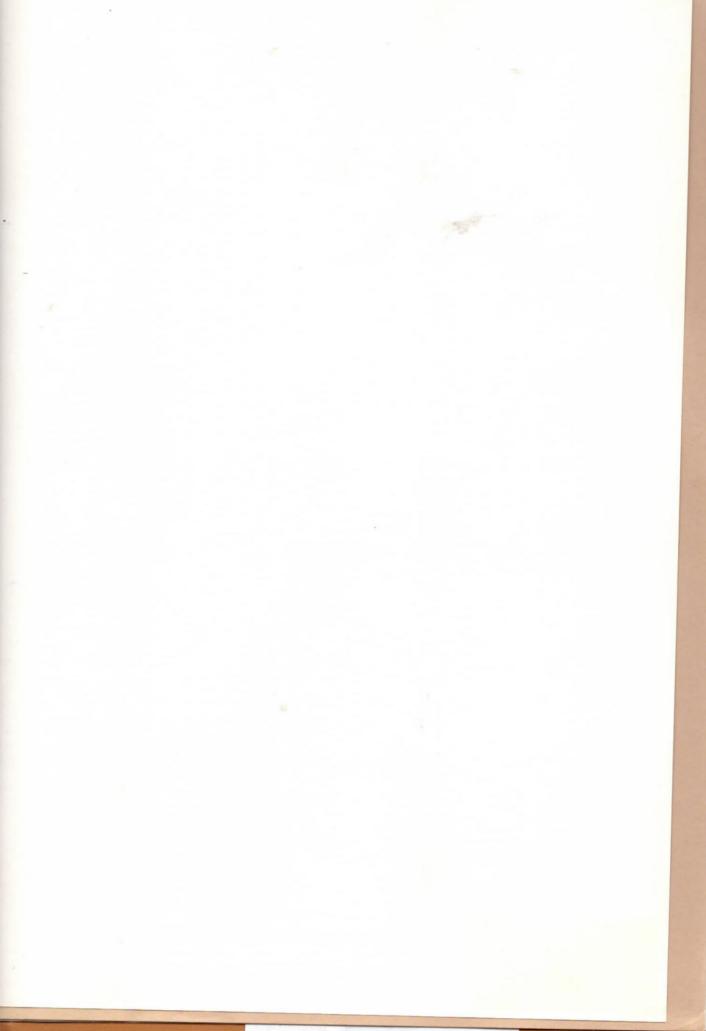
LOOKING SOUTH ALONG L.LR.R. AT ST. ALBANS STATION

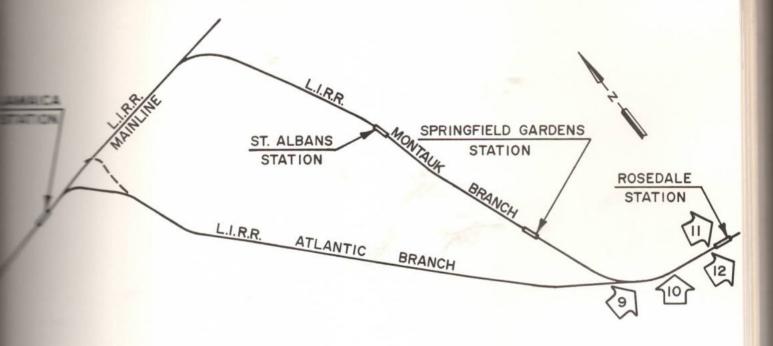


LOOKING WEST ACROSS L.I.R.R. AT ST. ALBANS NAVAL HOSPITAL



LOOKING EAST TOWARD 138TH AVE. FROM SPRINGFIELD GARDENS STATION







LOOKING EAST ALONG NORTH CONDUIT
AVE. TOWARD L.I.R.R. BRIDGE



LOOKING NORTH ACROSS LAURELTON PARKWAY TOWARD L.I.R.R. BRIDGE



LOOKING EAST ALONG L.I.R.R. FROM NORTH SIDE OF ROSEDALE STATION



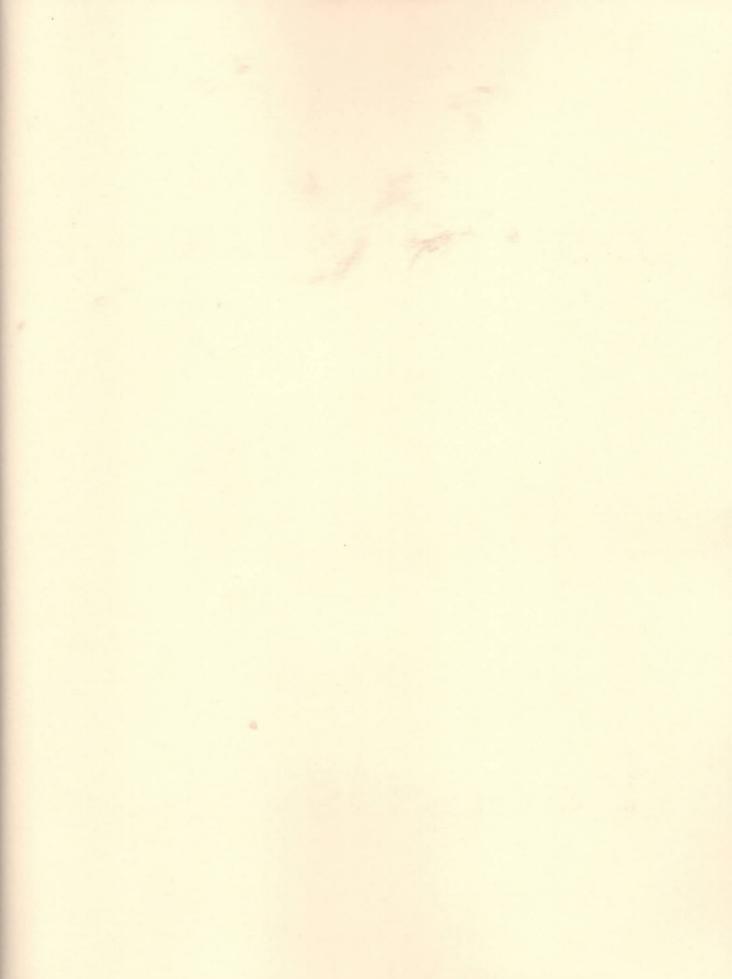
SOUTH SIDE OF ROSEDALE STATION

FIG. 2-10



SECTION 3

SELECTION OF STATION LOCATIONS



SECTION 3 - SELECTION OF STATION LOCATIONS

The selection of NYCTA station locations is of primary importance to the optimum utilization of the proposed line. The location of stations along the line is predicated on passenger access to the stations. From South Road to Springfield Boulevard, the line is intersected by a limited number of major streets which could be used to provide access to stations. These streets are Linden Boulevard, New York Boulevard, Baisley Boulevard, Farmers Boulevard, and Springfield Boulevard. After considering bus access, pedestrian access, projected station patronage, location of possible future parking areas, and operational characteristics of the line, proposed station sites were selected at 108th & 109th Avenues, Linden Boulevard, Baisley Boulevard, and Springfield Boulevard.

Patronage estimates for the 1985 peak hour westbound passenger volumes were prepared by the NYCTA for the four proposed stations on Route 131-D, Section 6. These patronage estimates include a distribution by direction of approach and by access mode including pedestrians, bus, park-and-ride, and kiss-and-ride. In the analysis of traffic circulation and station site facilities, it is estimated that the afternoon or eastbound peak hour will be the same as the morning or westbound peak hour.

At those stations with a potential park-and-ride patronage, the development of this potential is dependent upon an adequate number of parking spaces to meet this demand. Since the NYCTA is not engaged in providing parking, the development of these parking facilities should be by other public agencies or the private sector. At those stations with a large park-and-ride potential, it is desirable that the NYCTA promote and encourage the development of adequate parking facilities adjacent to the stations.



The critical period for park-and-ride patrons is the morning peak hour, with vehicles turning into parking facilities from the adjacent street system. Studies at similar transit stations indicate that between 5 and 9 a.m., sixty percent of the patrons arrive in the peak hour and the remaining forty percent in the adjacent hours. With an allowance of at least ten percent for the period after 9 a.m., the minimum number of parking spaces provided should be approximately 1.9 times the number of peak hour park-and-ride drivers if this potential is to be realized.

The critical demand on kiss-and-ride facilities occurs during the aftermoon peak hour when the patron is returning homeward. In the morning, the
drivers deliver their passengers to the station and only stop momentarily
to discharge them. On the return trip, the drivers frequently arrive at
the station site before their passengers and must stop and wait. Therefore,
facilities should be provided for these vehicles in order to avoid congestion
within the site or on the adjacent roadways. Because of train schedules,
headways, and the inability of most drivers to arrive at a point at a specific
time, the average waiting time will be in the order to 5 to 6 minutes.
Therefore one parking space is required for each ten kiss-and-ride patrons
in the peak hour. For these spaces to be useable for kiss-and-ride patrons,
parking restrictions should limit parking to 15 minutes.

The loading rate for busses exceeds the unloading rate and in some instances by two or three times. Therefore, the critical demand for bus facilities at a transit station also occurs during the afternoon peak hour. For local busses with either token or "exact fare only", the average loading rate is approximately 2 1/2 seconds per passenger. With suburban type busses using multi-zone fares, the average loading rate is approximately 6 seconds per passenger. If the average loading time per bus is about 85 percent of the headway time, which allows the remaining 15 percent for maneuvering,



local busses or 500 passengers per hour on suburban type busses.

The factors developed in the preceding paragraphs are rule-of-thumb factors and do not take into account unusual peaking characteristics which may occur at any particular station. In the following text, each station location is analyzed as to its mode of access and projected patronage. Refer to Figure 3-1 for station locations and projected patronage by quadrant.

108th-109th Avenue Station

This station site on the north side of 157th Street between 108th and 109th Avenues has been projected by the NYCTA to be primarily a pedestrian station with a 1985 peak hour volume of 1200. Both 108th and 109th Avenues are closed at the Atlantic Branch tracks to all but pedestrian traffic via existing pedestrian underpasses, and 157th Street, approximately 30 feet wide curb-to-curb, does not have a potential for heavy bus service or a large volume of kiss-and-ride or park-and-ride patrons.

The location of a station here has been recommended by the Office of Jamaica Planning and Development based on their plans for the redevelopment of the immediate area. The service area for the proposed station already has the second largest population of all the proposed stations. Construction of a new housing development west of the Atlantic Branch near 108th Avenue should begin within a year and will provide 550 units. The Office of Jamaica Planning and Development is also formulating a plan for the expansion of the site as well as the redevelopment of the entire area from South Road to Linden Boulevard and Sutphin Boulevard to Merrick Boulevard. This plan would be staged over a period of 20 years and would provide up to 4,000 additional units. A collection area of one square mile is presently capable



program now underway would increase that patronage to 4.4 million rides annually. These patronage figures were estimated by the New York City Planning Commission. This 34 percent predicted increase in patronage is a major justification for the inclusion of a station at 108th-109th Avenues.

The population to be served by this station falls into the low income grouping (see Socio-Economic Background). This proposed station will improve their opportunities of seeking employment and future development through improved access to commercial, educational, and recreational centers.

The distance from the Parsons Boulevard Station to the proposed 108th-109th Avenue Station is 0.7 miles, and the distance from 108th-109th to the proposed Linden Boulevard Station is 0.6 miles.

Linden Boulevard Station

Linden Boulevard is a prime station site because it presently carries considerable bus traffic. Two alternate station sites have been developed at Linden Boulevard. The recommended alternate is a station site on the east side of Linden Boulevard, accessible to both New York Boulevard and Linden Boulevard (See Fig. 5-4 in Section 5 of this Report) while the second alternate is a station site west of Linden Boulevard with access from Bedell Street at the end of Meyer Avenue (see Figure 5-5). The estimated patronage for this station prepared by NYCTA projects a total of 3,800 patrons in the peak hour in 1985 of which 800 will walk, 600 park-and-ride and 2,400 will use public bus. Of the patronage using the bus along Linden Boulevard, 1800 will come from the east and 600 from the west.



The recommended alternate requires a modification to the existing railroad structure to permit the station platforms to extend across Linden Boulevard. Existing Linden Boulevard is approximately 50 feet between curbs and generally operates as a wide two-lane roadway with parking lanes on either side.

The only available peak hour traffic data, obtained in 1964, indicate that at signalized intersections, the approach roadways probably operate with two lanes to serve the traffic volume. With the increase in traffic since 1964 and the additional traffic generated by the transit station, it is proposed to widen Linden Boulevard to 64 feet between curbs in the vicinity of the transit station to provide two moving traffic lanes and a bus loading lane in each direction (see Figure 5-8). With 1800 bus passengers from the east in the morning peak hour and toward the east in the afternoon peak hour, a minimum of two bus loading zones will be required on each side of Linden Boulevard.

The second alternate does not require any modification to the railroad structure over Linden Boulevard and the proposed bus loading areas will be on Bedell Street. Therefore, no widening of Linden Boulevard is contemplated on this alternate, but "no-parking" restrictions during peak hour flow may be required to permit 4-lane operation. On this alternate, the entire block bounded by Linden Boulevard, Meyer Avenue and Bedell Street is to be acquired for a patron and bus plaza and Bedell Street and Meyer Avenue are to be widened to provide bus loading zones and the free flow of traffic in the vicinity of the station. All bus routes on Linden Boulevard would be routed through the station plaza. The principal traffic problem on this alternate would be the left-turning movements from and onto Linden Boulevard from the station site.



The patronage estimate for this station indicates a potential for 600 park-and-ride patrons in the peak hour. On the basis of the criteria of 1.9 parking spaces per peak hour park-and-ride patron, approximately 1150 parking spaces would be desirable to develop this potential traffic. There is little available land for off-street parking at either of these sites except for a small parcel west of Meyer Avenue which may provide 120 spaces. The full potential of park-and-ride patronage is more likely to develop if off-street parking is provided.

An important asset of this location for a proposed station is the direct route that will exist between the St. Albans Naval Hospital area and this proposed Linden Boulevard Station. The future use of the entire St. Albans Naval Hospital tract has not yet been determined. The hospital building is currently functioning as a Veterans Administration Outpatient Unit.

Route 131-D will provide service for this area via proposed stations at both Linden and Baisley Boulevards.

The distance between 108th-109th Avenue Station and the Linden

Boulevard Station is 0.6 mile. The distance from the Linden Boulevard to
the Baisley Boulevard Station is 0.9 mile.

Baisley Boulevard Station

This proposed station is located on the southeast corner of Baisley Boulevard and Bedell Street, and is ideally located for pedestrian access from Rochdale Village Apartments. The site plan for this station is shown on Figure 5-11. There will be a total estimated patronage of 2750 during the peak hour in 1985; 1200 will walk to the station, 1200 will arrive by bus, and 350 will be park-and-ride patrons.

The patrons arriving by bus are expected to utilize bus routes on Baisley Boulevard, with 300 arriving from the west and 900 from the east.



These volumes will require only one bus stop on each side of Baisley Boulevard. For the anticipated park-and-ride patronage to develop, approximately 650 parking spaces will be required. Sufficient undeveloped land may be available in the northeast quadrant to develop adequate off-street parking at this site.

The existing railroad bridge carrying the Atlantic Branch of the LIRR over Baisley Boulevard must be rebuilt to accommodate the proposed station and platforms. The existing east abutment, which is within the street property line, restricts movement of traffic on Baisley Boulevard. South of Bedell Street, Baisley Boulevard is a four-lane divided roadway bordered by parking lanes. It is recommended that the east bridge abutment be rebuilt at the property line, permitting a continuation of this cross-section through the structure (100 foot right-of-way). This will provide four moving traffic lanes, two bus lanes, and a refuge island for pedestrians crossing Baisley Boulevard for ingress and egress to the station (see Figure 5-12).

Although no peak hour vehicular traffic volumes are available for Bedell Street, and the last volumes on Baisley Boulevard were obtained in 1966, it is estimated that the peak hour traffic generated by the proposed transit station will not create any major congestion at the signalized intersection of Baisley Boulevard and Bedell Streets.

The distances between proposed stations at Linden, Baisley, and Springfield Boulevards are 0.9 mile and 1.1 mile, respectively.



Springfield Boulevard Station

The proposed station at Springfield Boulevard is to be the terminal station for Route 131-D. As the most easterly station on the NYCTA system with good highway access to Nassau and Suffolk Counties, this station will serve a vast patron area. The proposed station entrance is located on the north side of the transit line and west of Springfield Boulevard. The entire block bounded by 140th Avenue, Springfield Boulevard and the Atlantic Branch of the LIRR has the potential for development into a bus plaza and parking facility to serve the transit facility. Currently almost 75 percent of the area is vacant, undeveloped land which makes it highly suitable for this purpose.

The patronage estimates prepared by the NYCTA indicate the 1985 peak hour passenger volumes by approach direction and mode of access, as shown in the following table:

PEAK HOUR PASSENGER VOLUMES

(Estimated 1985)

Quadrant	Pedestrians	City Bus	<u>Total</u>
NE	200		200
SE	200	1500	1,700
SW	200		200
NW	200	1600	1,800
	Suburban Bus Passengers		1,800
Automobile Passengers			1,400 1
Total Peak Hour Volume =			7,100

^{1 1100} park-and-ride and 300 kiss-and-ride



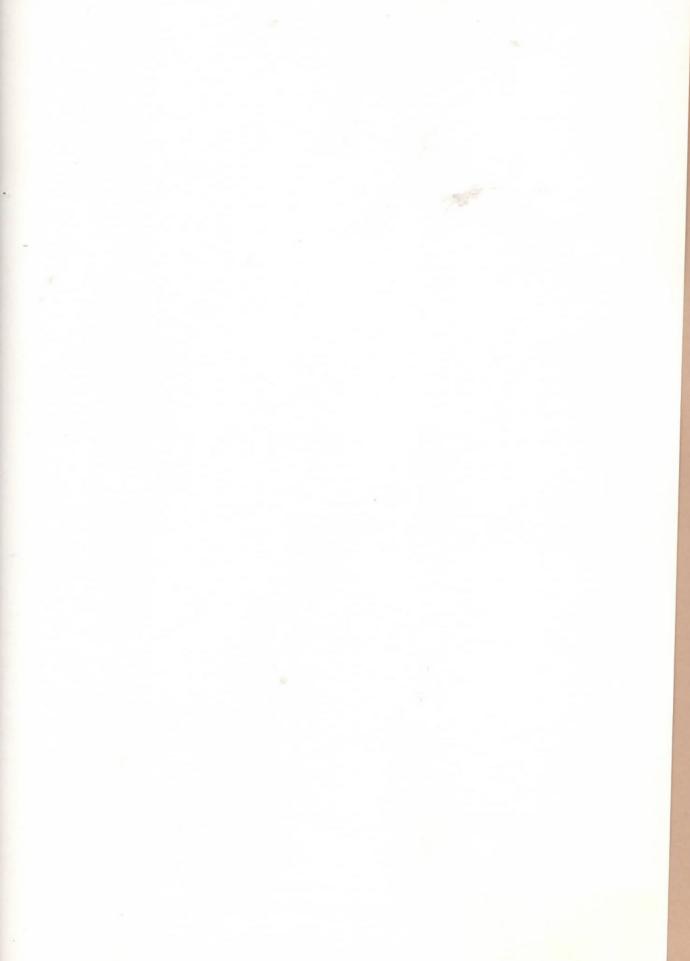
mese patrons by their various access modes are desirable. Two dedicated, but unimproved streets ("paper streets"), 141st Avenue and Coombs Street, intersect at the railroad right-of-way immediately adjacent to the proposed station. The paving of these two streets will provide convenient driver access to the station and permit traffic circulation through the site.

[See Figure 5-30].

Thirty-one hundred of the projected passengers in the peak hour use the local bus system for travel to and from the station. Since the station site will probably not be the end of a local bus run, but rather an intermediate stop, the local busses will prefer to stop at the curb on Springfield Boulevard than to make a loop through the station site. With more than local passengers in each direction, bus loading zones for two busses should be provided on each side of Springfield Boulevard. Pedestrian cross walks should be provided across Springfield Boulevard for patrons using northbound busses.

It is anticipated that suburban bus routes which will be established to convey 1800 passengers in the peak hour, between Nassau and Suffolk Counties and this station, will utilize the station site as their westerly terminus. Therefore, parking spaces and loading berths for suburban busses are highly desirable within the site. To accommodate 1800 passengers in the peak hour, a minimum of four loading berths will be required.

A total of approximately 30 short-term parking spaces will be required to serve the projected 300 kiss-and-ride patrons during the peak hour, together with a loading and unloading platform, readily visible from these parking spaces and within a short walking distance of the station entrance. This station, being the terminal station, contains additional space for various offices, crew quarters, locker rooms, and other facilities.



parking may be provided within the recommended right-of-way

The above outlined facilities are the minimum required to provide a manual station site. The right-of-way acquisitions necessary these facilities are shown on Figure 5-30.

If the full potential of this station is to be developed, off-street spaces for approximately 900 cars will be required. The proposed satisfield Boulevard Station site has sufficient area for development of street parking to meet this demand. The station site plan, Figure 5-14, the ultimate design for this site, including a surface parking lot in the northwest corner of the site and possibly a parking garage located on the northeast corner. Every effort should be made to encourage the appropriate agencies to acquire this additional property to provide for the development of off-street parking at the site.

Nour, the station operation will generate the need to add 50 local busses, 36 suburban busses and 1150 automobiles to the existing roadway network in the vicinity of the station. The principal access route to the station is Springfield Boulevard, from both north and south, with a secondary access from Farmers Boulevard via 140th Avenue. The latest available traffic counts on Springfield Boulevard indicate that the additional traffic generated by the station will not create any capacity problems in the immediate vicinity. However, because of the large turning volume into and out of the station site, signalization will be required on Springfield Boulevard at both the station drive and 140th Avenue.

The principal origin of the majority of patrons to this station will be from the east with some coming from as far as Suffolk County. The primary access routes for these patrons are from Sunrise Highway and Southern Parkway

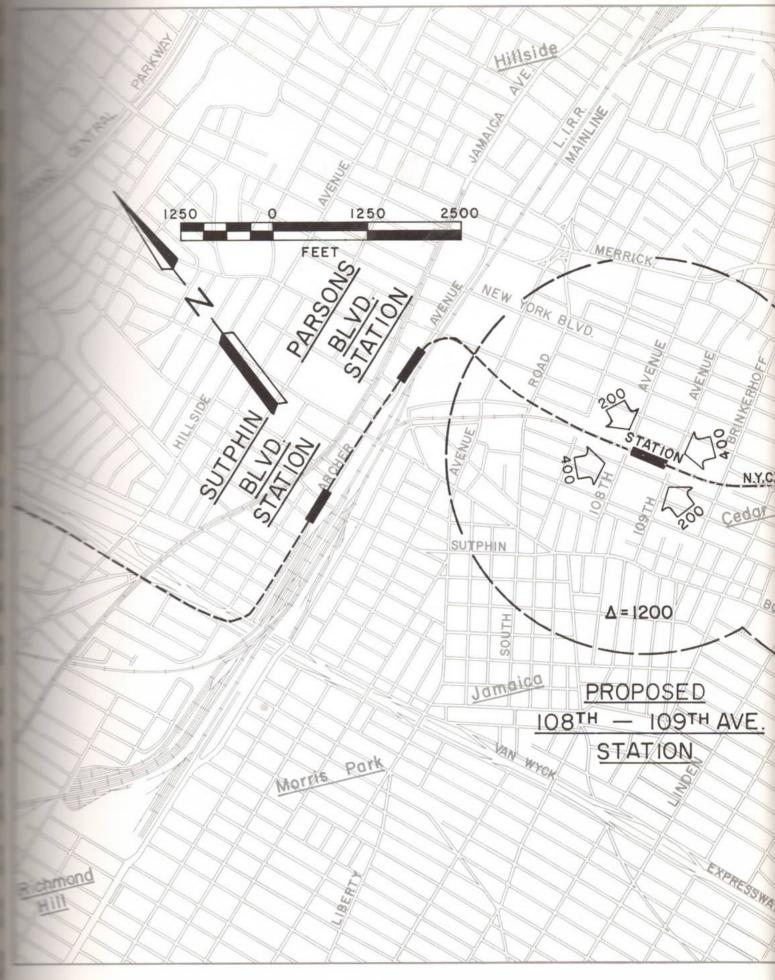


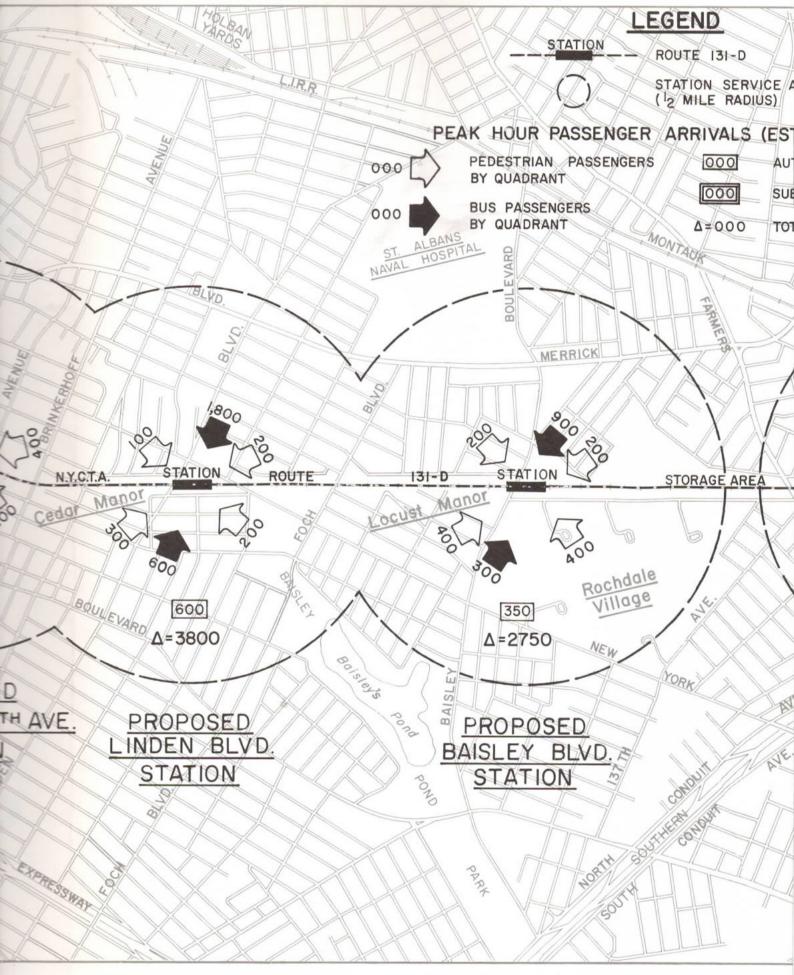
Via North Conduit and Springfield Boulevard. Westbound traffic on North Conduit, continuing west to Farmers Boulevard and then east on 140th Avenue will have all right turns to the station site. Also, the very tight weaving conditions and high volume of traffic on North Conduit may make this a favored route to the station.

The storage of all 20 trains behind the terminal station is one of the important advantages to this location. Traffic operations in the storage yard will be separate from traffic operations on the revenue tracks. This provides for optimum operations for safety, and fast, efficient service to the patrons of the NYCTA. Thus, salient reasons for the selection of this location for the terminal station are:

- The access road to the station, Springfield Boulevard, is a 4-lane highway capable of handling large volumes of traffic.
- The storage of trains is behind the station, which provides for optimum storage and separate traffic operations for storage and revenue tracks.
- Vacant land is available for parking facilities as well as for maneuvers by the anticipated car and bus traffic.
- High patronage is projected from a large population surrounding the station area and beyond.







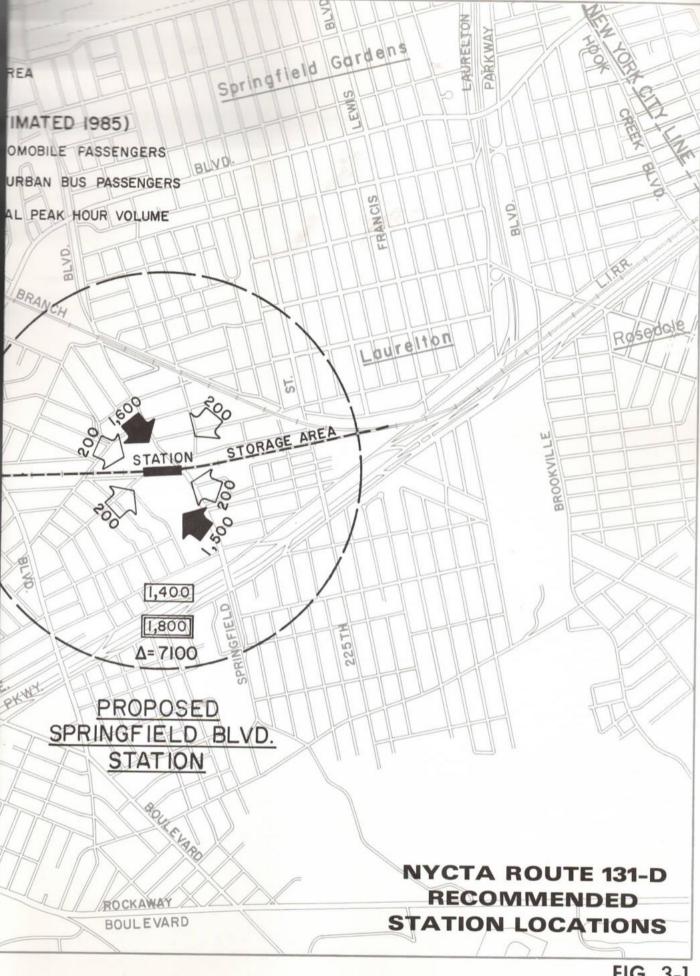


FIG. 3-1



SECTION 4

SELECTION OF RECOMMENDED ALTERNATIVE



ALTERNATIVE 1 - DUAL OCCUPANCY, NYCTA ROUTE 131-D & LIRR ON ATLANTIC BRANCH

This alternative is a further refinement of that proposed in the original Phase 1 Report prepared by the Engineering Department of the NYCTA in 1970. The basic operating plan is for two LIRR tracks to share the existing LIRR Atlantic Branch right-of-way with two NYCTA tracks from the intersection of the two lines east of South Road to the terminus of the proposed NYCTA line at Springfield Boulevard Station. NYCTA passenger stations are to be located at 108th-109th Avenue, Linden Boulevard, Baisley Boulevard, and Springfield Boulevard. The selection of these locations was based on the determinations discussed in Section 3 of this report. Operational requirements of the NYCTA require storage areas for 33 trains, a car-wash facility, and a car cleaning platform along this portion of the route.

Plan and profile views of this alternative are shown on Figures 4-1 and 4-2. Cross sections of the proposed construction are shown on Figures 4-3, 4-4, 4-5, and 4-6. All civil work and line work are identified on these figures.

The existing LIRR tracks pass from the Old South Viaduct over South Road onto the embankment for the remainder of the route. The NYCTA tracks now under construction in Section 5 terminate 200 feet east of South Road. The existing LIRR line will occupy the north portion of the embankment. It is therefore necessary for the NYCTA tracks to cross under the LIRR tracks within a concrete box structure. These NYCTA tracks will emerge from a portal at the point where the proposed NYCTA tracks parallel the LIRR relocated tracks and will ascend on a 3.19 percent grade to coincide with the LIRR grade prior to crossing the 108th Avenue pedestrian underpass. The grade



in this area. Relocation of the existing LIRR tracks is necessary movide adequate clearance between the two alignments, which essentially mellel each other, staying within the right-of-way where possible for memainder of the route.

After their emergence from the portal, the proposed NYCTA tracks will diverge for the approach to the 108th-109th Avenue Station. The existing NOSth Avenue Bridge must be widened on both sides to accommodate the new track spacing. The LIRR tracks will maintain a center-center spacing of 14 feet with a center-center spacing of 18.5 feet between adjacent LIRR and NYCTA tracks on tangent sections. A typical embankment section (looking east) indicating the standard track spacing on tangent sections requiring no LIRR relocation is shown on Figure 4-3. The typical right-of-way encroachment on the south side of the embankment section caused by the widening can be seen on this section, as is the necessary relocation of the existing LIRR transmission poles.

Figure 4-3 shows an embankment section cut through the 108th-109th Avenue Station platform (looking east). The 108th-109th Avenue Station is to be a center platform station with passenger access to be provided midway between 108th and 109th Avenues. Extensive property taking will be necessary in this block to construct the new south retaining wall and the station. Construction of this station requires that the existing right-of-way be extended approximately 25 feet to the south, with entire additional properties required at the station building itself. The LIRR track relocation dictates the removal and relocation of the existing LIRR transmission towers along the north side of the embankment.

Beyond the 108th-109th Avenue Station, the tracks traverse the 109th Avenue Bridge, which must be widened in the same manner as the 108th Avenue Bridge. A new retaining wall on the south side must be constructed in



The existing LIRR horizontal alignment is maintained except stations or curvature dictate realignment.

The existing structures at Brinkerhoff and 111th Avenue will be mediate ined to carry the LIRR tracks, which will remain in their existing mositions until the approach to Baisley Boulevard Station. The alignment utilize as much of the existing LIRR facilities as possible. New mru-girder structures will be constructed adjacent to the existing structures to carry the NYCTA tracks at these locations. A Typical Bridge Section showing the new structure configurations for Alternative 1 at Brinkerhoff Avenue, 111th Avenue, New York Boulevard, and Foch Boulevard is illustrated on Figure 4-4. The tracks will continue east on retained embankment, with new walls to be constructed on the south side, to a point west of Linden Boulevard where the NYCTA tracks will again diverge on the Linden Boulevard Station approach. This divergence and the accompanying station construction require extensive property acquisition in the blocks bordering the right-of-way on the south from Meyer Avenue to New York Boulevard. The design and layout of the proposed Linden Boulevard Station will be similar to that of the 108th-109th Avenue Station. The existing Linden Boulevard Bridge will be maintained for the LIRR tracks and a new thru-girder adjacent structure will be provided to carry the NYCTA tracks and the center platform of the station.

East of Linden Station, the existing New York Boulevard Bridge will be maintained for LIRR traffic with a new structure to be constructed on the south side for NYCTA traffic (see Figure 4-4). These patterns for bridge widening and retained embankment with new walls on the south side will be continued to 120th Avenue, where the alignment shifts laterally



metessary to avoid taking the large buildings and a major portion of the section is shown in section in shown in section by construction of temporary structure run-arounds. As was the case at the previous stations, extensive property taking will be required; however, the majority of the properties involved are vacant lots. The tracks will shift back into the existing right-of-way east of the station and follow the basic retained embankment pattern to Farmers Boulevard. A may south retaining wall will be required through this area. This wall must be pile-supported in the area of the Rochdale Village Power Plant.

The Farmers Boulevard bridge is to be maintained for the existing
LIRR tracks and a new adjacent thru-girder bridge is to be constructed
for the NYCTA tracks. The NYCTA tracks will flare on this structure to
permit construction of an underjump to the Farmers Boulevard storage area.
This underjump, connecting to both Eastbound and Westbound tracks by a
lap switch, will provide access to the storage and maintenance area
within the existing LIRR right-of-way between Baisley and Farmers
Boulevard. It is necessary to depress this storage and service area below
existing ground to prevent an at-grade crossing of the LIRR revenue tracks
and the NYCTA lead track to the storage area. Grade separation between
the NYCTA tracks and the underjump track will be provided by stepped
retaining walls, which will connect to a portal where the underjump will
run through a concrete box subway structure under Farmers Boulevard to
its emergence in the depressed storage area. The underjump conflicts



Farmers Boulevard. Storage is provided for 13 trains with car cleaning and washing facilities. Large retaining walls will be required on all sides of the storage area. The existing bridge abutments at the Farmers Boulevard Bridge must be underpinned so as to straddle the underjump and maintain LIRR service without excessive settlement. The embankment section and adjacent storage area at Sta. 621+00 is shown in section (looking east) on Figure 4-6.

A crossover will be located beyond the 140th Avenue Bridge on the station approach to provide maximum flexibility in the routing of trains to the terminal station during peak hours. Springfield Boulevard Station will be a center platform station with an entrance on the north side along Springfield Boulevard. This station quadrant location is dictated by the presence of the Southeast Queens High School bordering the right-of-way on the south side. The additional width of right-of-way from Farmers Boulevard to Springfield Boulevard will require the taking of property along the south side. The station will require the acquisition of a block along Springfield Boulevard.

The existing Springfield Boulevard bridge is maintained to carry the existing LIRR tracks, and a new portion is added to accommodate the tracks leading the Springfield Boulevard storage area. The necessary structure modifications are shown on Figure 4-5. The storage area is designed for a maximum capacity of 20 trains, bringing the total storage capacity of the route to 33 trains as required. The storage area will be constructed on retained embankment requiring a new retaining wall on the south side.

As was the case at Farmers Boulevard, this storage area will have a main lead track with feeder tracks leading to sidings. The Springfield Boulevard



The existing LIRR Laurelton Station platform and the existing along Prospect Court are also shown in Figure 4-6. The wide swath additional right-of-way required is also indicated on this figure.

The 224th and 225th Street Bridges must, be widened to provide NYCTA strange area. Construction of this storage area will require the acquisition of three entire city blocks, the partial taking of three others, and all of Prespect Court.

A field inspection of the existing LIRR plant showed all equipment to be in serviceable condition. Although normal wear and deterioration ere evident, there are no existing conditions which could cause immediate service interruptions. The most prominent irregularities are broken third-rail insulators and weathered third-rail protection boards.

New electrification facilities must be provided for the NYCTA line.

Three new traction-power substations will be required for the route. The spacing and capacity of these substations is predicated on supplying power to the trains as demanded by the operating schedule for maximum traffic periods within the limits of permissible voltage drops. Each traction substation will consist of two rectifier transformers and rectifiers with switching, relaying, overcurrent protection, switchgear, and auxiliaries.

Underground feeder cables are required to carry the d.c. power from the substations to the third and running rails.

A new signaling system will be provided for the NYCTA tracks. This system will be compatible with existing NYCTA systems so that operating procedures and train operation will be the same for all lines. The signals supervisory system will give track occupancy information, control of traffic blocks and control of interlockings to the dispatcher who will control the system from a control tower to be constructed in Jamaica Yard



The all-relay interlocking system will provide speed information

The ATO equipment in the lead car of trains, insure safe running between

The all-relay interlocking system will provide speed information

The all-relay interlocking system will provide speed information

The communications systems will be compatible with existing NYCTA

stems. It will incorporate two-way train radio, police radio, dial

melephones, hand-crank direct-wire telephones, emergency alarms, public

mess systems and closed circuit television.

Twenty-five 4-inch underground ducts will parallel the tracks. The ducts will be utilized for power, signal and communications cables.

The total estimated construction cost for Alternative 1 is \$147.8 million, of which \$134.0 million is required to construct the new NYCTA route and \$13.8 million is needed to modify the existing LIRR facilities along the Atlantic Branch. The overall cost breakdown is summarized in TABLE 4-A. The costs reflect the large quantity of retaining walls and embankment necessary to transform the existing two-track system into a four-track dual facility within the existing right-of-way. The extensive bridge work and station construction will be complicated by the maintenance of adjacent LIRR traffic during construction, which results in high construction costs. Costs of power, signals and communications are high due to the difficulties encountered with maintaining the existing system.

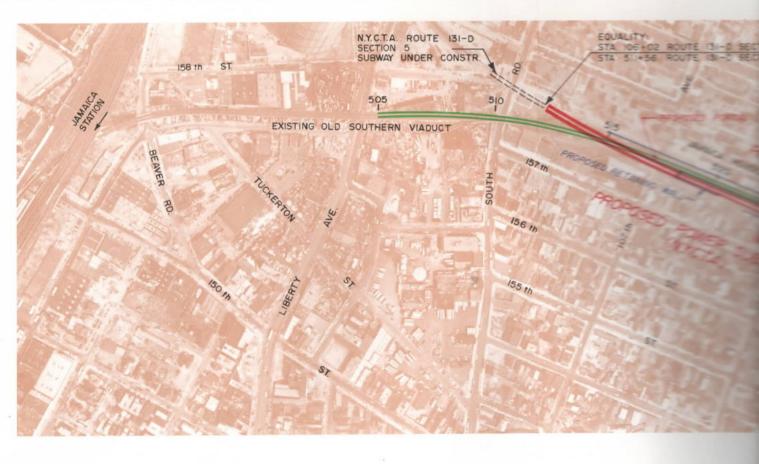
An overview of the major portion of the civil work involved in Alternative 1 includes the construction of high retaining walls and additional embankment for the length of the route. Thirteen bridges must be modified; of these, 12 are to be widened either by actually connecting to the existing bridge or by constructing new adjacent superstructures for the NYCTA tracks. The thirteenth, at Baisley Boulevard, must be completely rebuilt. The storage of 33 trains along the line will require considerable extra construction as evidenced by the underjump tunnel and large walls at Farmers

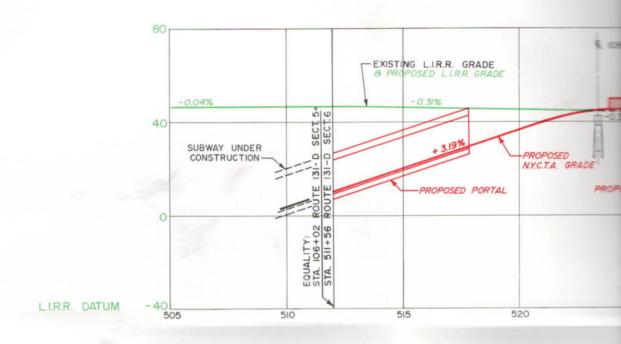


trains is attained with all facilities in use; i.e., all maintenance, and storage tracks are occupied. Trackwork will consist of constructing NYCTA line and relocating the existing LIRR line at two locations:

Road to Brinkerhoff Boulevard and at Baisley Boulevard. The existing platform station at Locust Manor must be removed. Passenger service be handled by the NYCTA through new stations at 108th-109th Avenue, Boulevard, Baisley Boulevard and Springfield Boulevard. A large boulevard, Baisley Boulevard and Springfield Boulevard. A large additional right-of-way must be acquired to accommodate the stations, storage areas and widened four-track facilities. A total of private properties will be affected by this alternative, either through total partial acquisition.

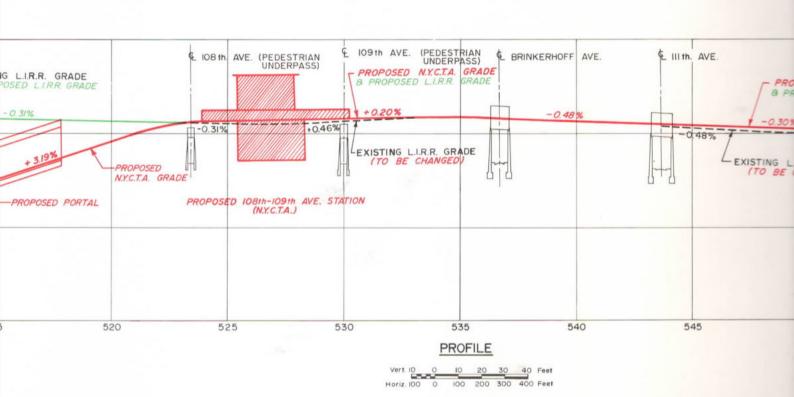
The existing LIRR traction power and signaling systems will require alteration for the construction of this alternative. All LIRR track remaining in its present position will retain the existing equipment; relocated tracks will utilize their present third-trail and signaling devices, which will be relocated along with the running rails. New materials will be used to replace missing or defective parts. Feeders from substations to rails need not be relocated. The existing LIRR pole and tower electric transmission lines, which also carry the existing signals, must be relocated for almost the full length of the line to avoid interference with the proposed NYCTA tracks. Connections into the existing LIRR and Baisley Boulevard substations will be made using underground cable. The existing LIRR Cedar Manor substation at Brinkerhoff Avenue will be rebuilt on the north side of the tracks.

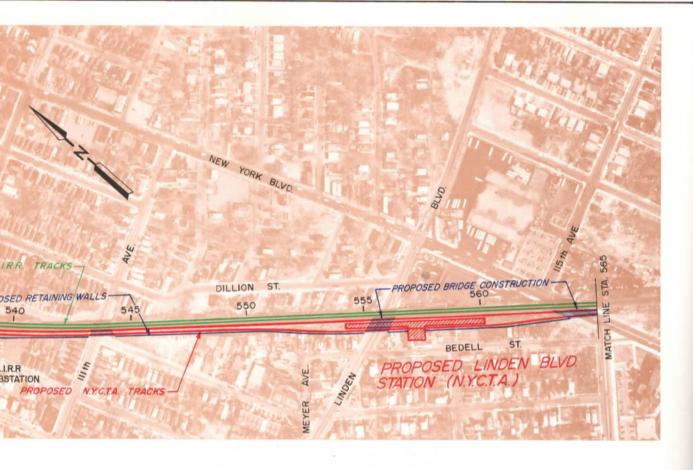


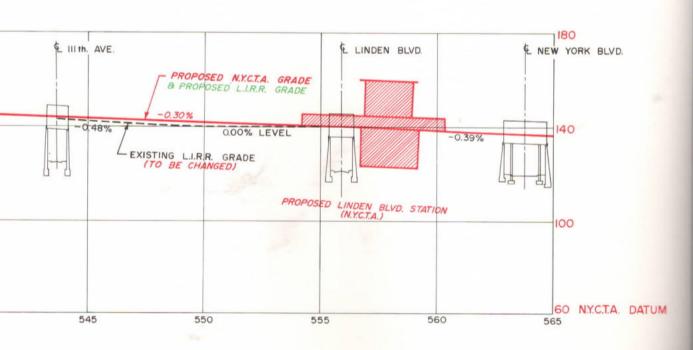


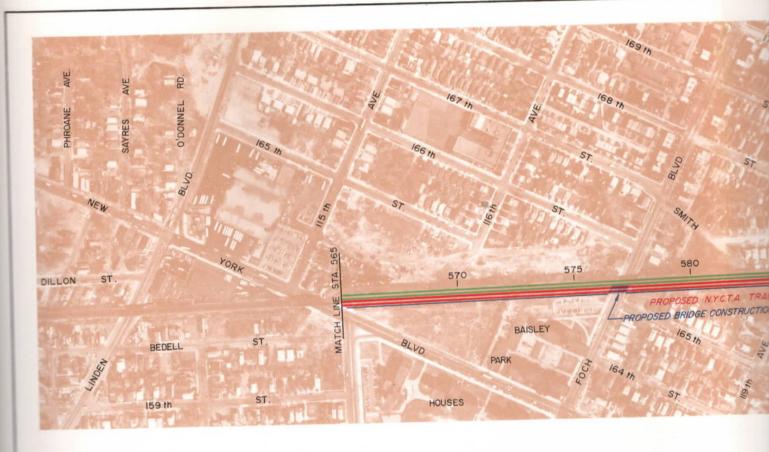


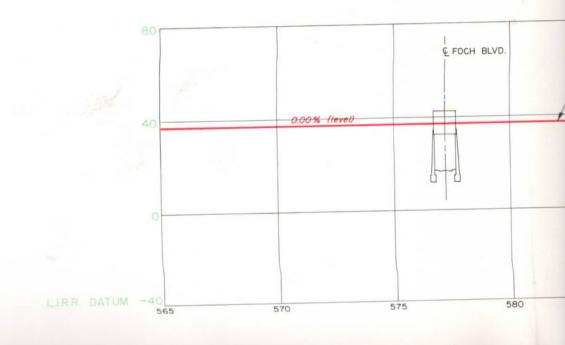
PLAN- ATLANTIC BRANCH

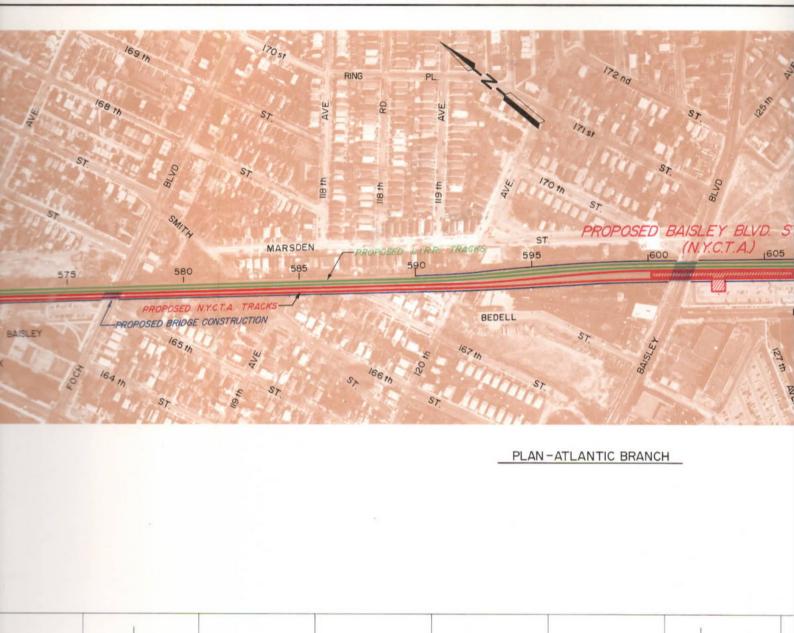


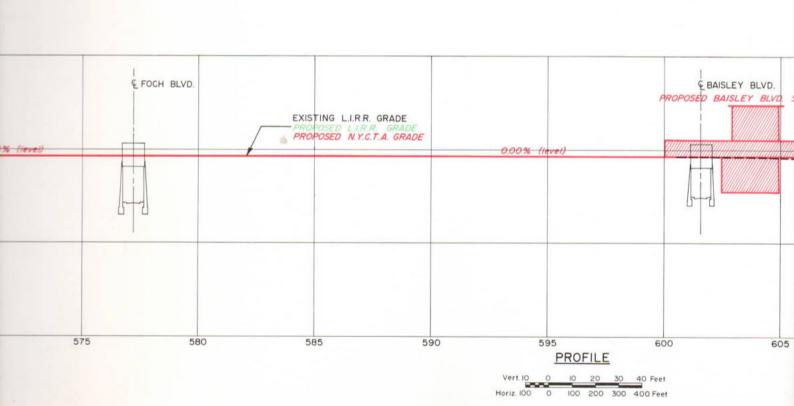


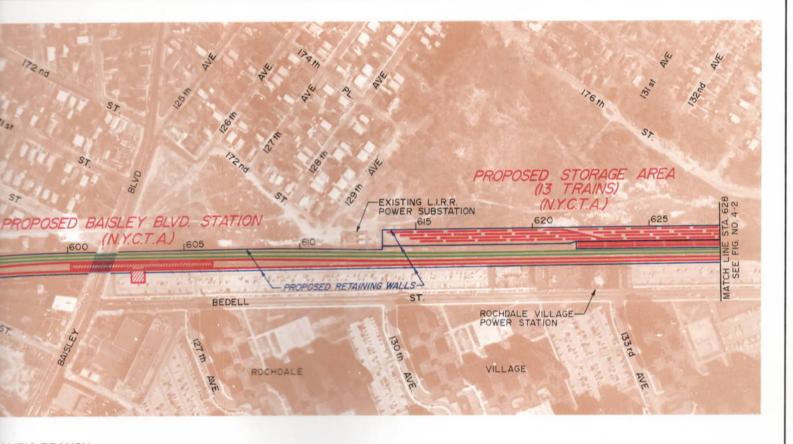






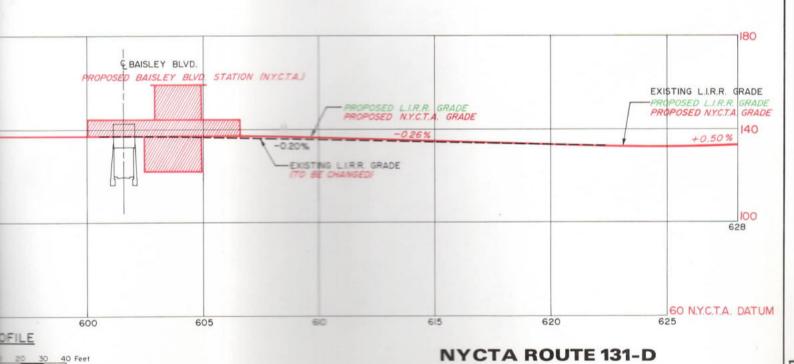






ANTIC BRANCH

200 300 400 Feet

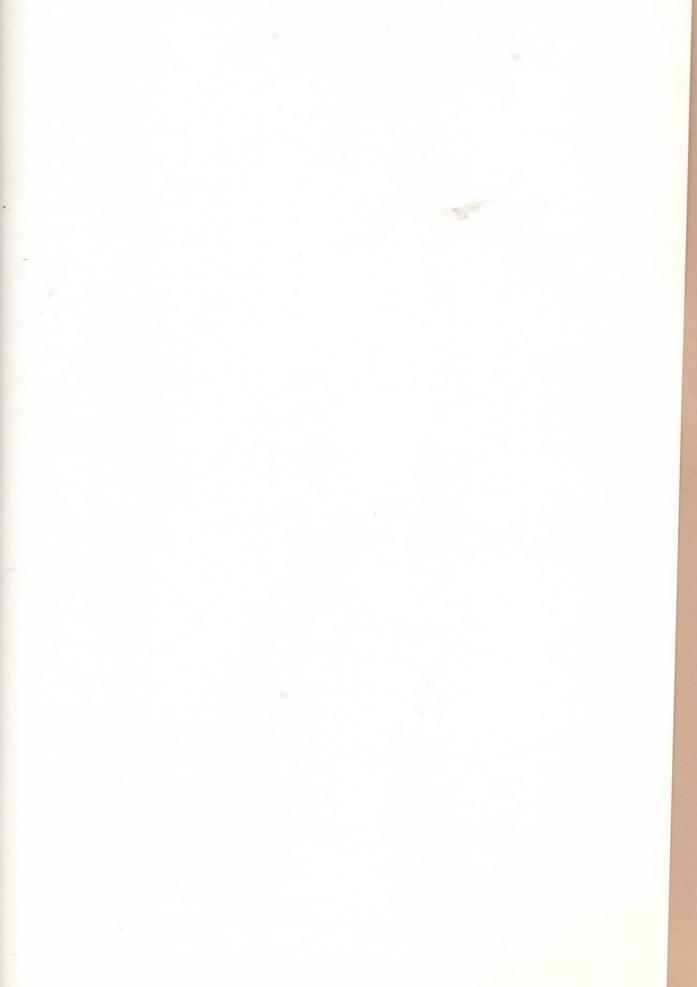


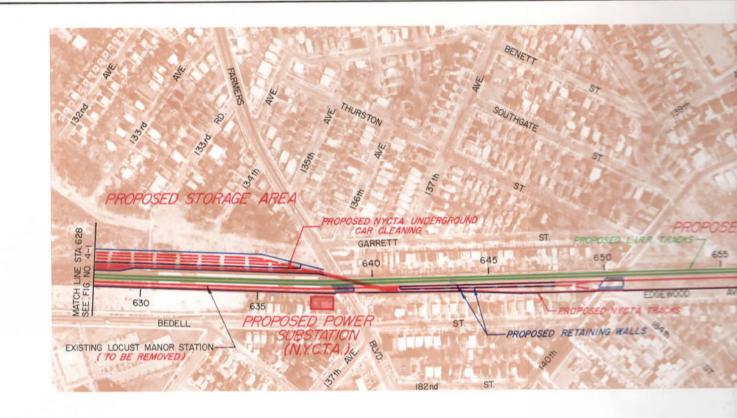
ALT. 1

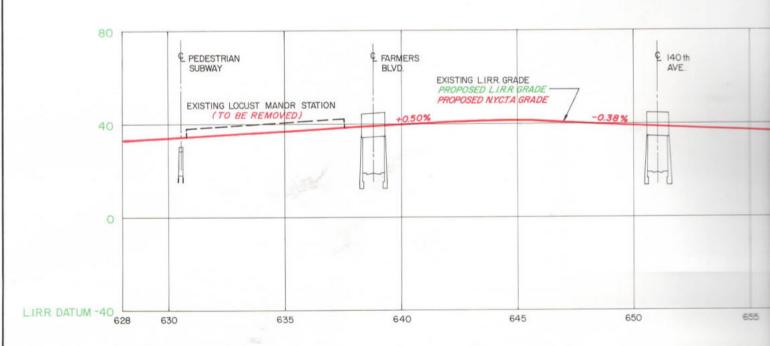
DUAL OCCUPANCY ON ATLANTIC BRANCH

PLAN & PROFILE STA. 505 TO STA. 628



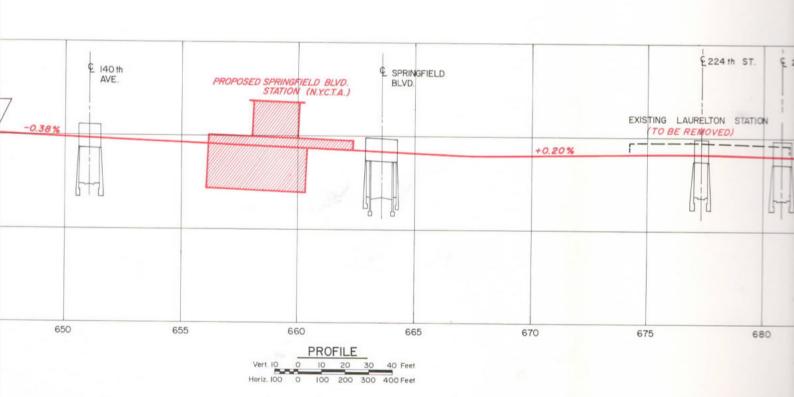


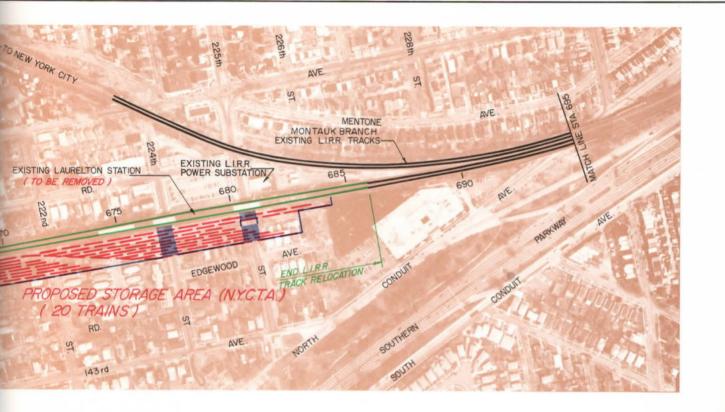




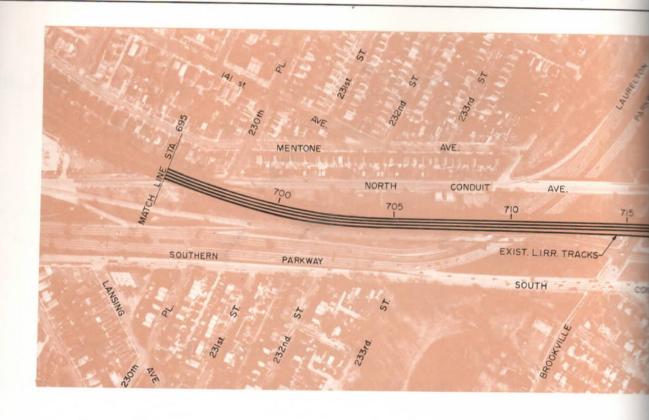


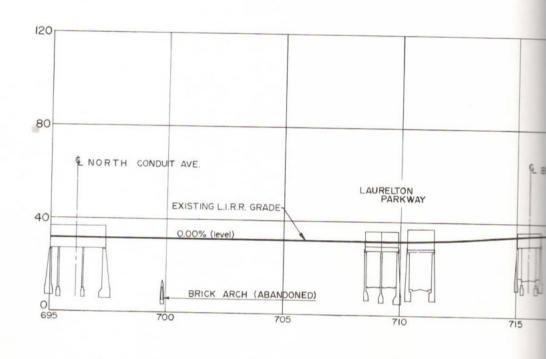
PLAN-ATLANTIC BRANCH

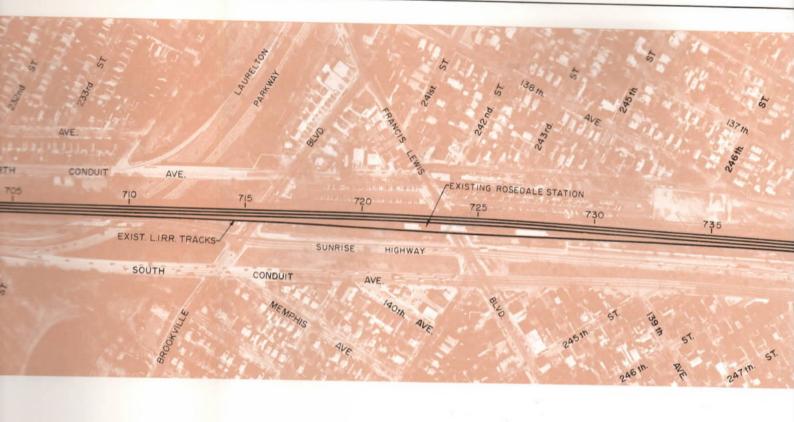




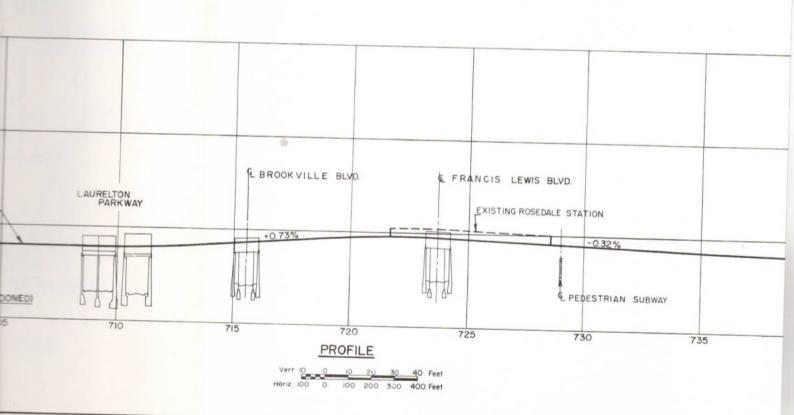


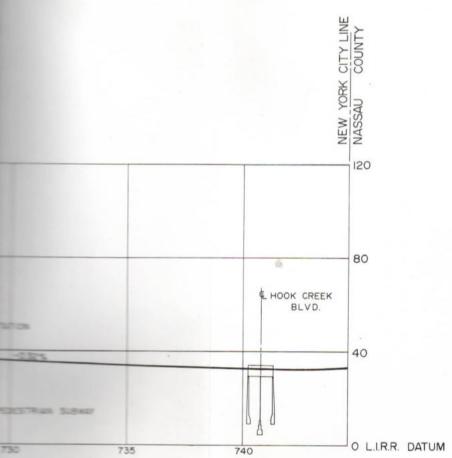






PLAN-ATLANTIC BRANCH



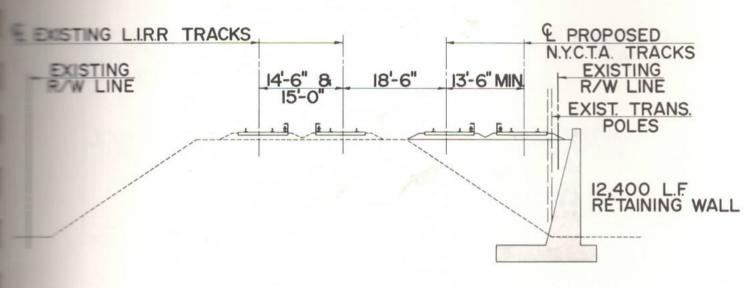


NYCTA ROUTE 131-D

ALT. 1 DUAL OCCUPANCY ON ATLANTIC BRANCH
PLAN & PROFILE STA. 628 TO STA. 740

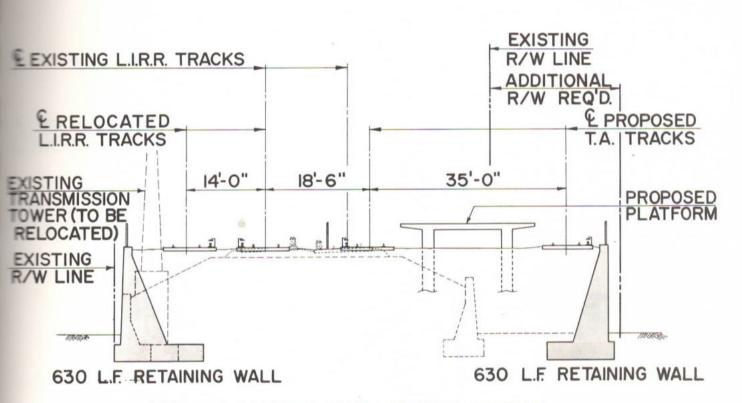
FIG. 4-2





ALTERNATIVE - 1 DUAL OCCUPANCY, N.Y.C.T.A. ROUTE 131-D

AND L.I.R.R. ON ATLANTIC BRANCH

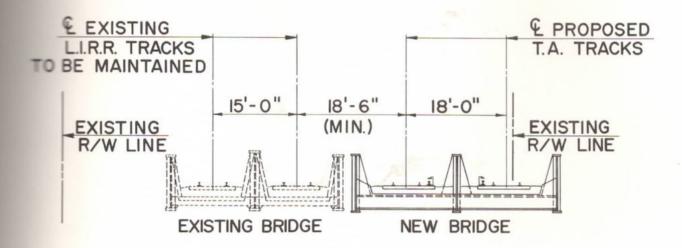


SECTION AT 108 TH-109 TH AVENUE STATION

ALTERNATIVE - 1 DUAL OCCUPANCY N.Y.C.T.A. ROUTE 131-D

AND L.I.R.R. ON ATLANTIC BRANCH



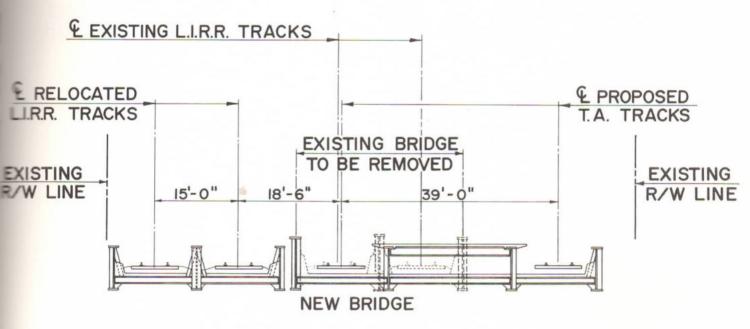


TYPICAL BRIDGE SECTION

BRINKERHOFF AVE., IIITH AVE., NEW YORK BLVD., FOCH BLVD.

ALTERNATIVE - 1 DUAL OCCUPANCY, NY.C.T.A. ROUTE I3I-D

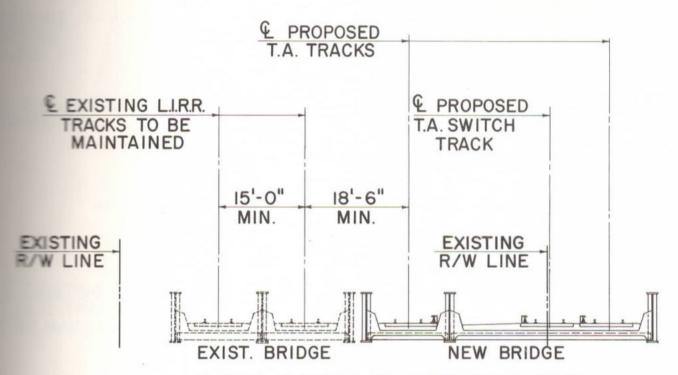
AND L.I.R.R. ON ATLANTIC BRANCH



ALTERNATIVE - 1 DUAL OCCUPANCY, N.Y.C.T.A. ROUTE 131-D

AND L.I.R.R. ON ATLANTIC BRANCH



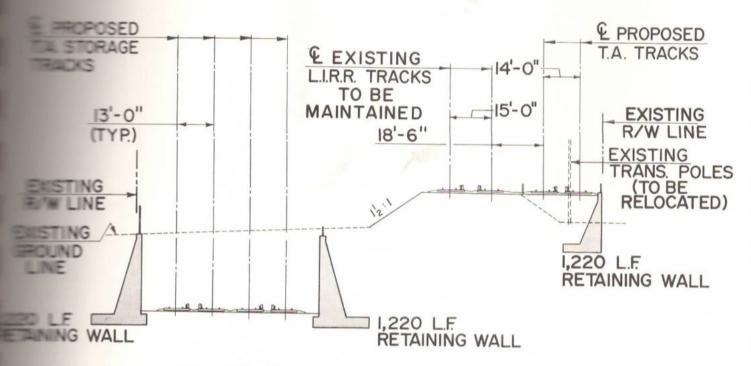


BRIDGE SECTION AT SPRINGFIELD BLVD.

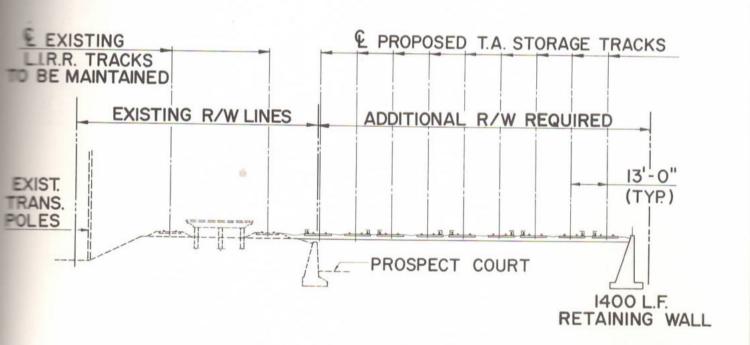
ALTERNATIVE - 1 DUAL OCCUPANCY N.Y.C.T.A. ROUTE 131-D

AND L.I.R.R. ON ATLANTIC BRANCH





EMBANKMENT SECTION AT STA. 62I+00
SERVICE AND STORAGE AREA
ALTERNATIVE - 1 DUAL OCCUPANCY, N.Y.C.T.A. ROUTE I3I-D
AND L.I.R.R. ON ATLANTIC BRANCH



ALTERNATIVE - 1 DUAL OCCUPANCY N.Y.C.T.A.

ROUTE 131-D AND L.I.R.R. ON ATLANTIC BRANCH

FIG. 4-6



DUAL OCCUPANCY OF LIRE ATLANTIC BRANCH ESTIMATED CONSTRUCTION COST (MILLIONS) (6/77 PRICES)

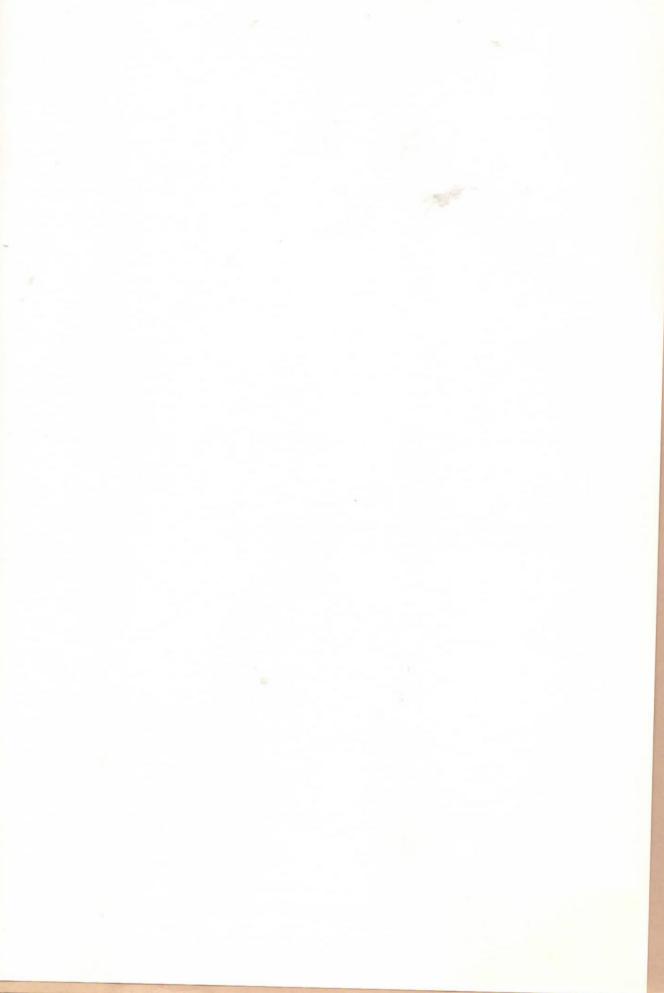
ROUTE 131-D & LIRR

TYPE OF CONSTRUCTION

	-	7.				_			
ITE UF CUNSIKUCITUN	FLAG PROT.				-		1.7		
	COMM. SYSTEM	4.0	0.3	9.0	0.3	0.2	1.8		
	SIGNAL	3.0	2.9	3.8	2.8	3.3	15.8		
	POWER	4.5	2.4	a - 6	2.3	3.3	21.6		
	TRACK	6.	1.5	2.5	1.7	3.7	1.3		
	BRIDGES & OTHER STRUCTURES	0.01	3.0	3.6	2.2	16.0	34.8	147.8	
	WALLS	3.7	2.9	7.5	3.6	7.3	25.0		
	STATIONS	4.0	4.0	5.1	6.0	0.0	1.61		
	CIVIL	9.1	6.0	2.7	2.4	9.1	16.7		
	SECTION	SOUTH ROAD THRU	III TH AVENUE THRU FOCH BLVD.	FOCH BLVD. THRU FARMERS BLVD.	FARMERS BLVD. THRU SPRINGFIELD BLVD.	STORAGE AREAS	\$ SUB-TOTAL	\$ TOTAL	

SUMMARY (MILLIONS)

134.0	13.8	147.8		
NEW NYCTA ROUTE 131-D	MODIFICATIONS TO EXIST. LIRR ATLANTIC BRANCH	TOTAL \$		



The main premise of this alternative is to allow the Long Island Railroad to vacate the Atlantic Branch upon conversion of the Montauk Branch to a three-track, reverse-signaling system. Once the Atlantic Branch is vacated by the LIRR, Route 131-D, Section 6 can be constructed as a NYCTA two-track system, making use of a major part of the existing track and alignment.

Plan, profile, and section views of the Atlantic Branch portion of Alternative 2 are shown on Figures 4-7 thru 4-12. Plan, profile, and section views of the Mainline and the Montauk Branch are shown on Figures 4-13 thru 4-22.

Atlantic Branch

Existing facilities on the Atlantic Branch will be available for use by the NYCTA when the LIRR vacates the branch. However, the existing signal and communication systems are not compatible with the NYCTA criteria. A completely automatic block signaling system and a dial telephone communications system will be provided for the proposed route. The existing third rail can be modified and adjusted to meet NYCTA standards. Trackwork will involve the replacement or relocation of existing track, rejuvenation of existing track, and the construction of storage yard tracks (see Sdction 5 - Line Work). Continuous-welded rail will be used for all new track construction.

This alternative entails the termination of LIRR operations on the Atlantic Branch between Jamaica Station and Valley Stream. The three existing LIRR stations at Locust Manor, Laurelton and Rosedale will then be available for possible use by the NYCTA. However, the existing stations do



to be incorporated into the NYCTA system. Therefore, stations and Laurelton will be removed while the station at Rosedale in service (via crossovers to the Montauk Branch and a temporary the north side) until Route 131-D is fully operational.

Boulevard, Baisley Boulevard and Springfield Boulevard. The selection locations was based upon the determinations discussed in Section 3 report. Additional right-of-way will be necessary around the locations to meet station requirements.

A major part of the existing track alignment will be used, especially the bridge locations, where existing thru-girder superstructures with clearances require Route 131-D track alignment to conform precisely the existing track alignment.

Route 131-D, Section 5 subway is presently under construction and terminates 200 feet east of South Road. The proposed Route 131-D, Section 6, begins at this location. The proposed tracks will emerge from a portal within the Atlantic Branch right-of-way. The tracks continue on an ascending grade of 3.19% until they reach the level of the existing tracks fust west of the 108th Avenue Bridge, thereby eliminating the need for bridge modifications. The existing alignment is then maintained to a point 250 feet from the end of the proposed station platform at 109th Avenue.

Due to the location of 108th-109th Avenue Station, a slight modification of the existing alignment is necessary starting at this point and terminating 160 feet west of the Brinkerhoff Avenue Bridge. The existing LIRR alignment is then maintained through Baisley Boulevard to a point 1,360 feet west of Farmers Boulevard. The two proposed revenue tracks are then shifted



the south to provide for a connecting track between the storage yard, car wash, and cleaning facilities between Baisley and Farmers Boulevards and the storage yards located just east of the proposed Springfield Boulevard Station. This connecting track conforms to the location of the existing westbound track. The storage yard, just east of the Springfield Boulevard Station extends from the station to a point just west of North Conduit Avenue. The NYCTA revenue tracks will terminate at Springfield Boulevard Station.

Route 131-D, Section 6, is on embankment throughout this project with the exception of the first 500 feet at the western end. Proposed grades are generally the same as the existing grades.

There are two vertical alignment conditions that are of importance in this design. The grade of the tracks between the portal and the 108th Avenue Bridge is 3.19 percent. This condition was necessitated by meeting the required vertical clearance under South Road and the existing vertical clearance at 108th Avenue. The other condition involves the construction of the Springfield Boulevard Bridge. Because of the size of the bridge and its high replacement cost, the grade is to be raised through the structure to provide a correct distance of four feet from the base of rail to the platform. This was done to avoid the rebuilding of the entire superstructure. The proposed grade line is shown on Figure 4-8.

All station platforms for Route 131-D, Section 6, will be side loading platforms with the exception of the island platform proposed for the terminal station at Springfield Boulevard. Access to the 615-foot platforms will be provided by stairways and escalators. Elevators will be located in all of the stations to provide platform access for handicapped patrons.



The side loading platforms serve as a noise abatement feature in that a large portion of the noise from the trains is dampened between the two platforms. Retaining walls will be constructed to contain the embankment within the existing right-of-way. Right-of-way to be taken includes 18 private properties where the total property is taken and three partial takings. Right-of-way requirements are discussed in Section 5.

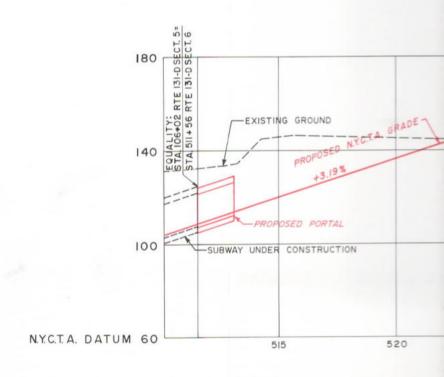
The Route 131-D, Section 6 tracks will be maintained in the same position as the existing LIRR tracks through most of the project. Major utility adjustment is therefore not necessary. Where city roadways intersect the LIRR, the utilities are located within the curb lines of the roadway. Any modification or replacement of bridges will involve protective measures for any existing utility. New utility construction will be required at each of the four proposed stations and for the car wash and car cleaning platform located in the storage yard west of Farmers Boulevard.

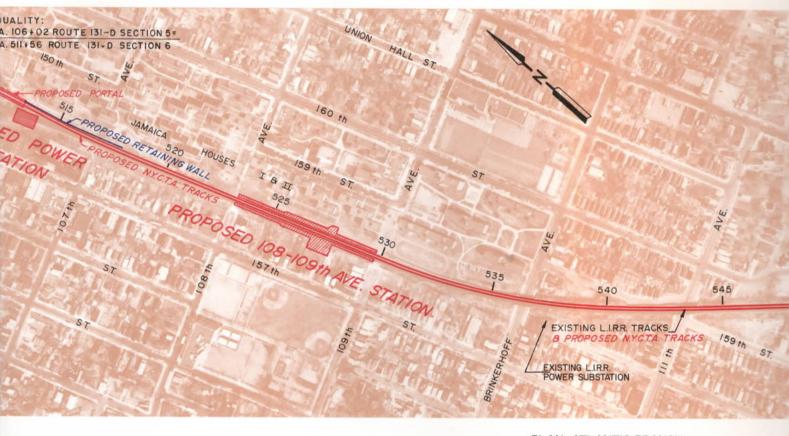
The power, signal, and communications systems for this alternative will be essentially the same as described in Alternative 1. The systems are also described in detail in Section 5.

The total estimated construction cost for this portion of Route 131-D (Alternative 2) is \$70 million. Cost estimates are shown in Table 4-B.

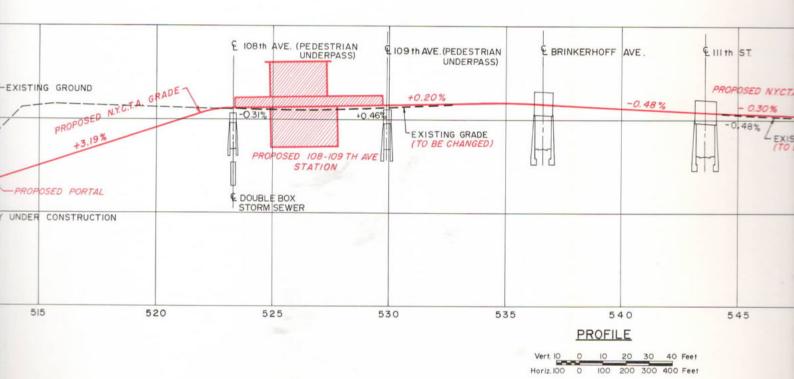


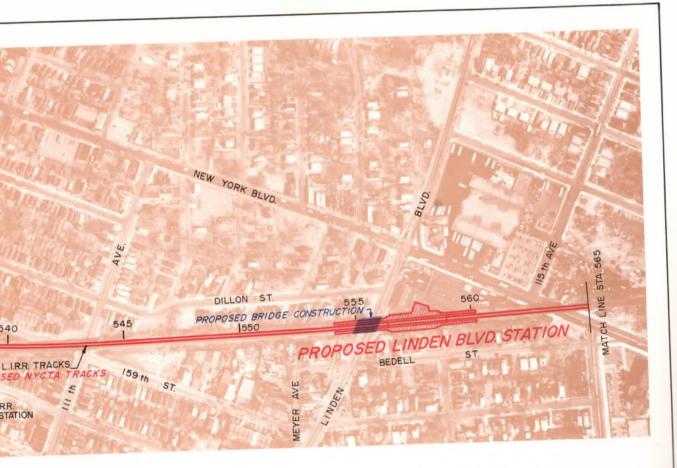




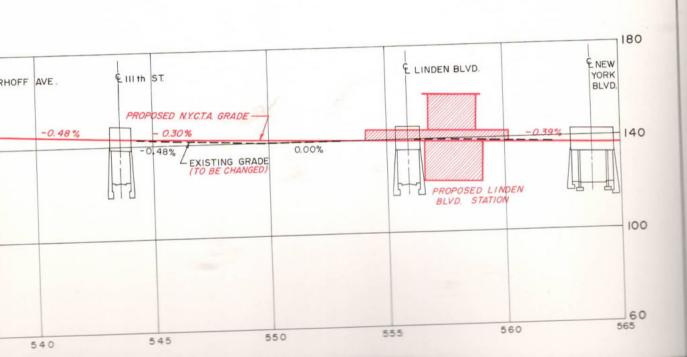


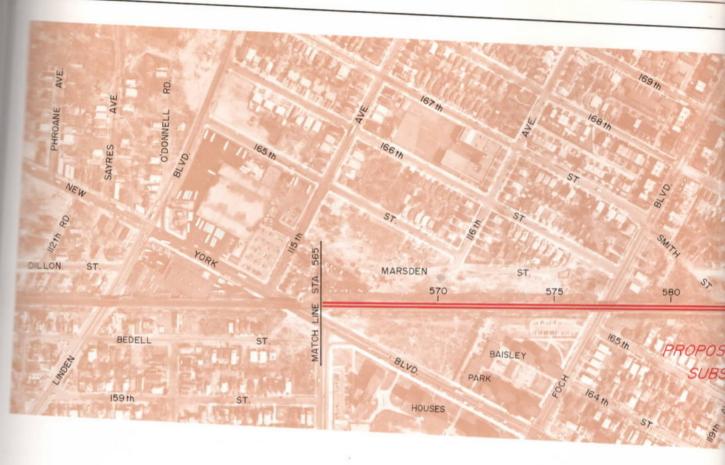






ANTIC BRANCH

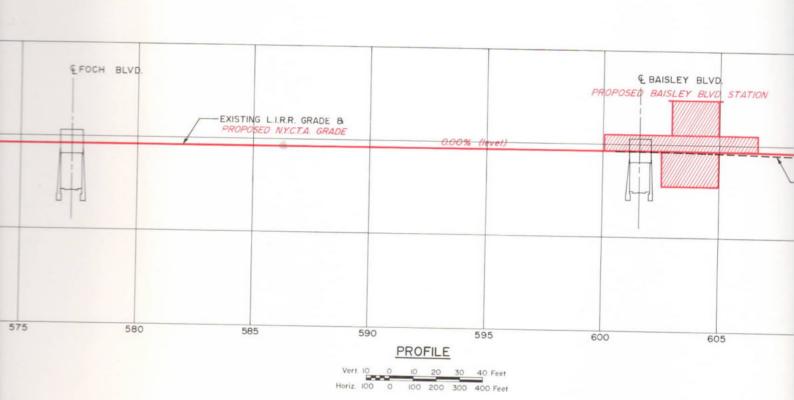




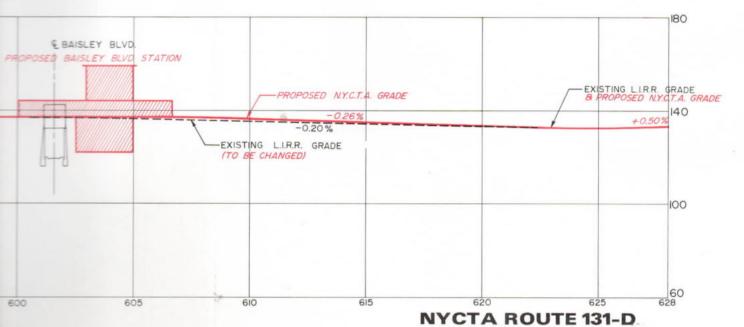




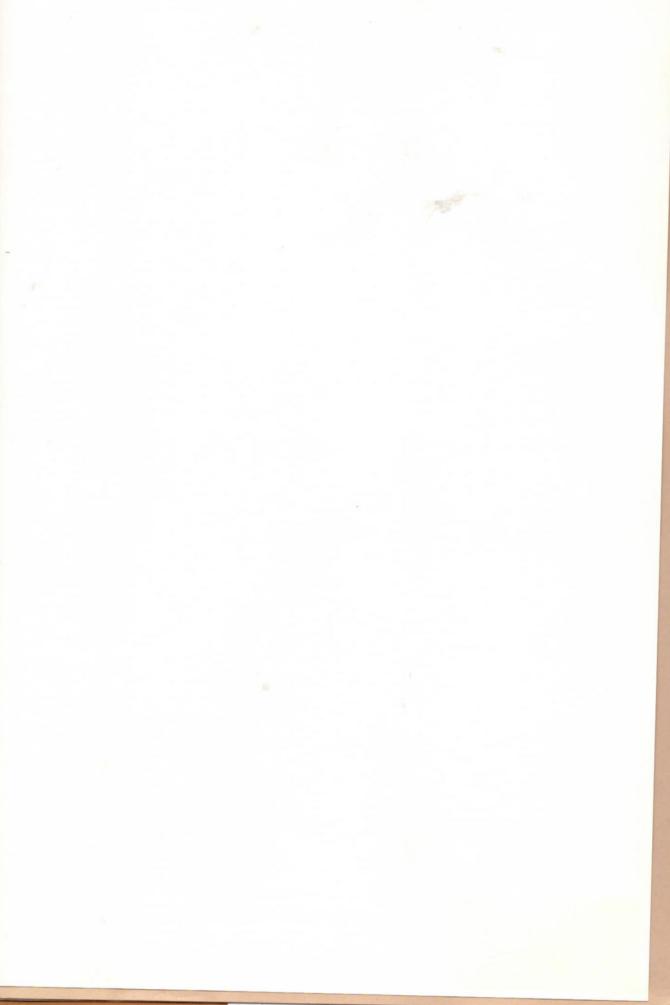
PLAN-ATLANTIC BRANCH



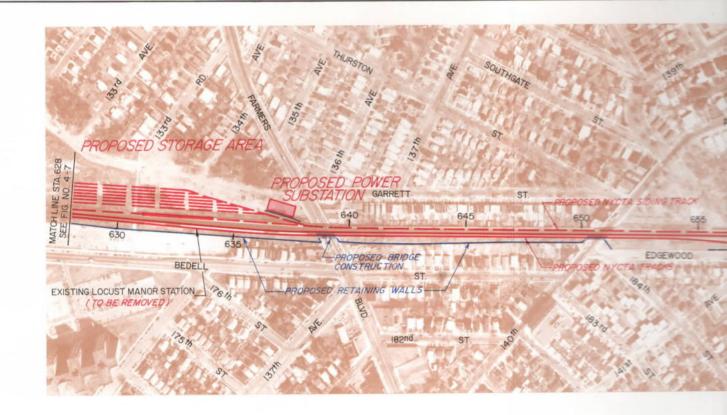




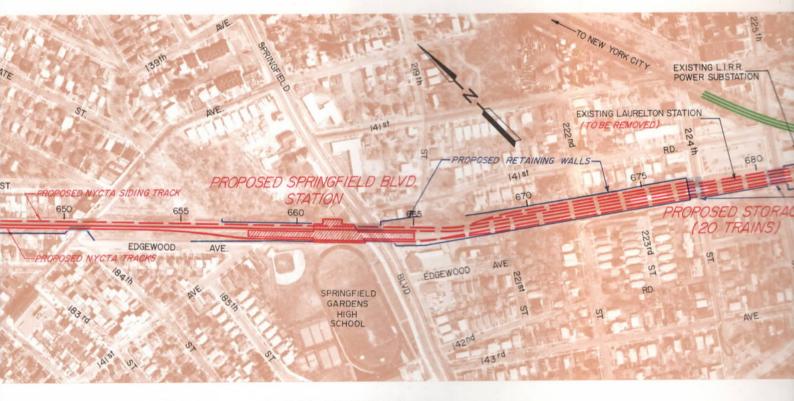
ALT. 2 SINGLE OCCUPANCY ON ATLANTIC BRANCH AND L.I.R.R. 3RD TRACK ON MONTAUK BRANCH PLAN & PROFILE STA. 511 TO STA. 628



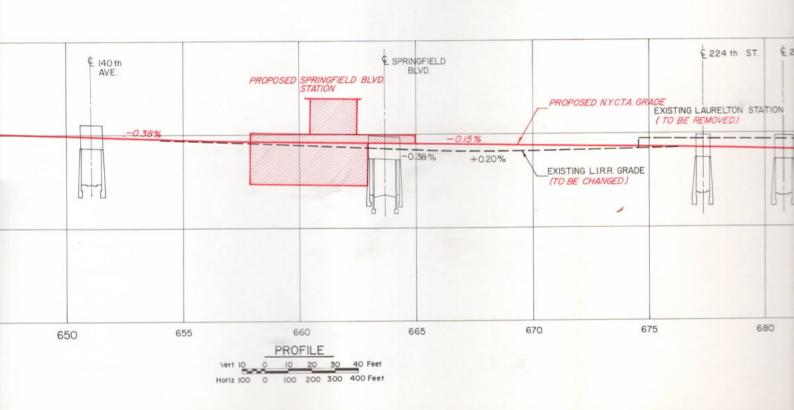


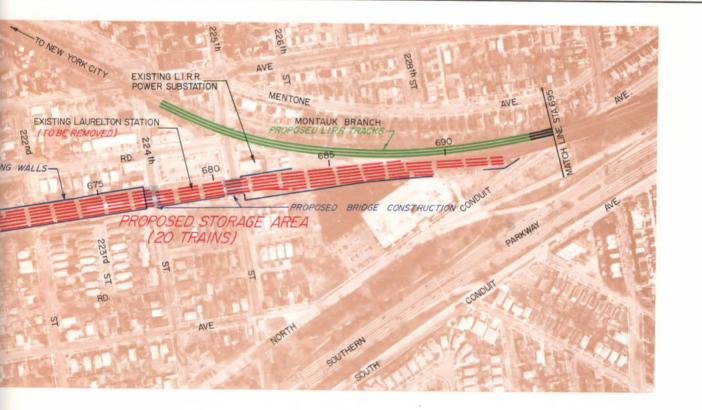


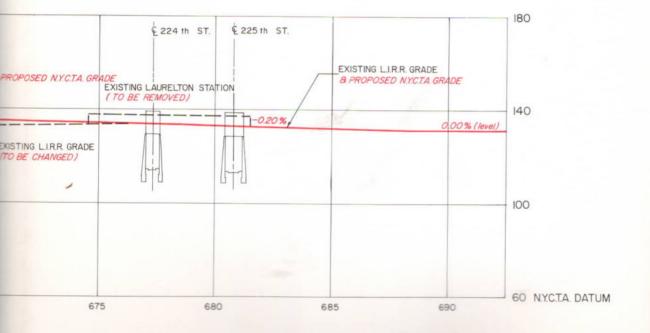


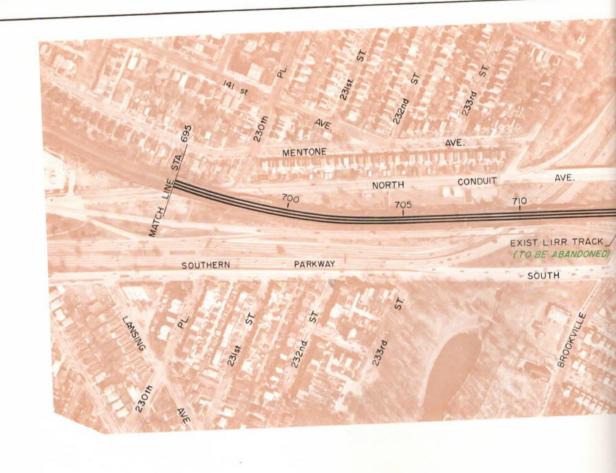


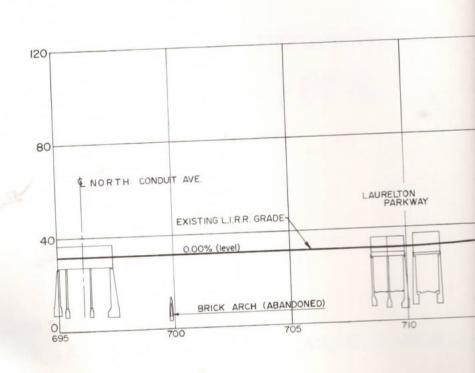
PLAN-ATLANTIC BRANCH





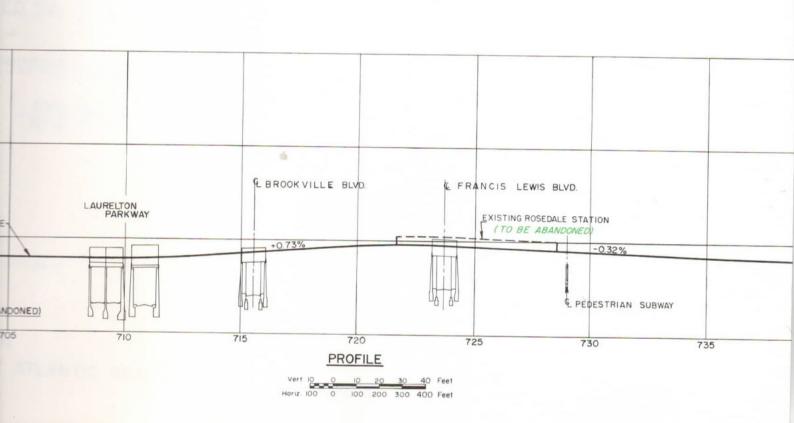


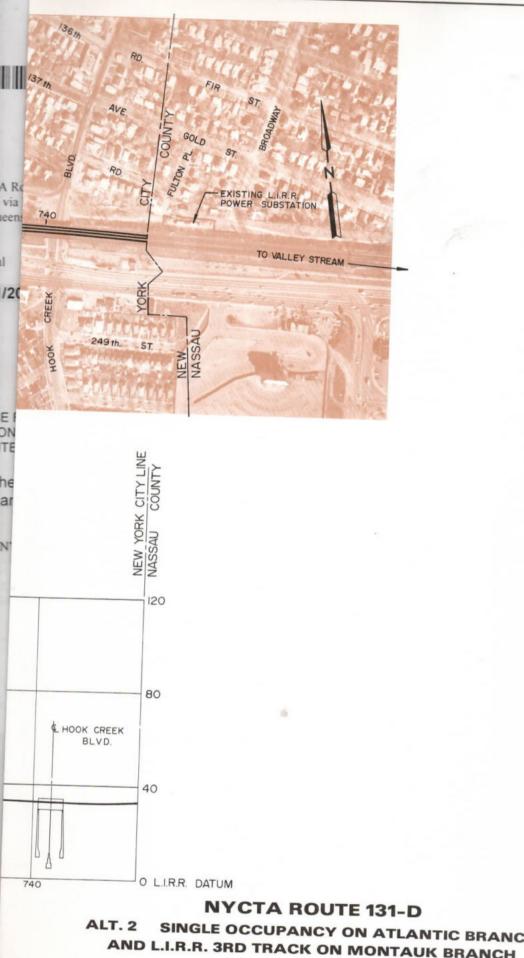






PLAN-ATLANTIC BRANCH

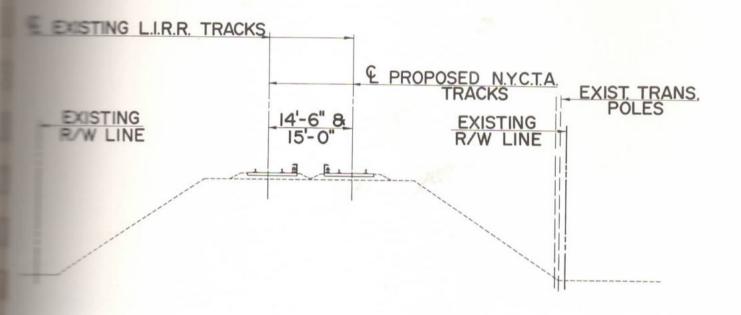




SINGLE OCCUPANCY ON ATLANTIC BRANCH AND L.I.R.R. 3RD TRACK ON MONTAUK BRANCH PLAN & PROFILE STA. 628 TO STA. 740

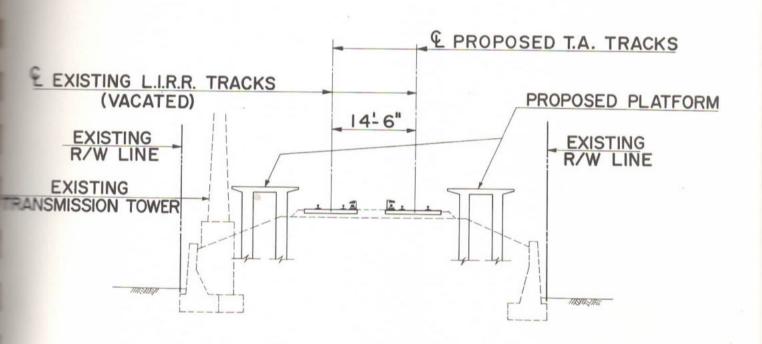
FIG. 4-8





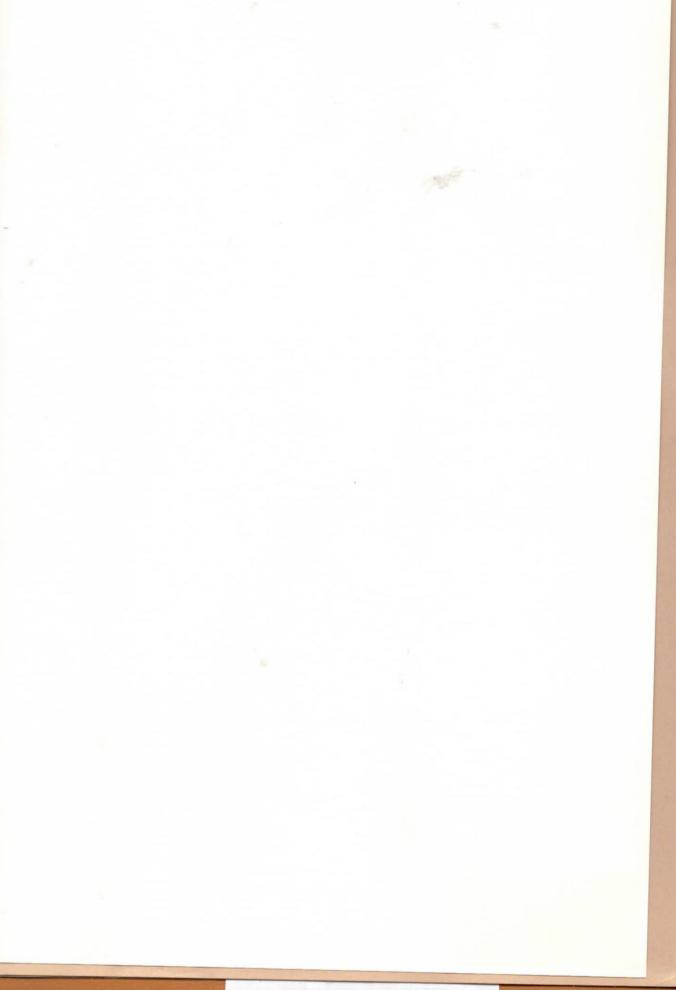
TYPICAL EMBANKMENT SECTION

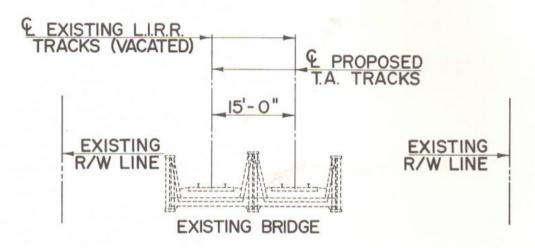
TERNATIVE - 2 SINGLE OCCUPANCY, N.Y.C.T.A. ROUTE 131-D ON ATLANTIC BRANCH



SECTION AT 108 TH-109 TH AVENUE STATION

LITERNATIVE - 2 SINGLE OCCUPANCY, N.Y.C.T.A. ROUTE 131-D ON ATLANTIC BRANCH

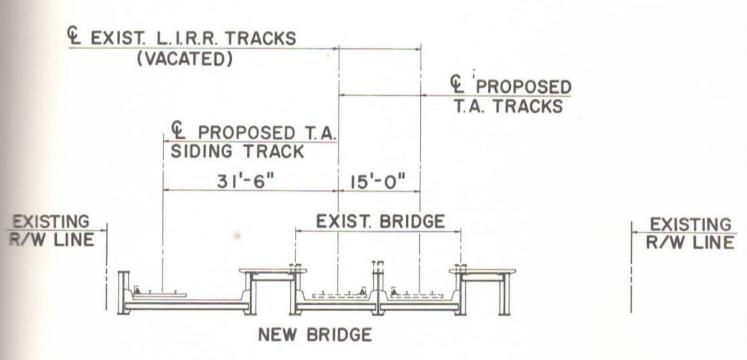




TYPICAL BRIDGE SECTION

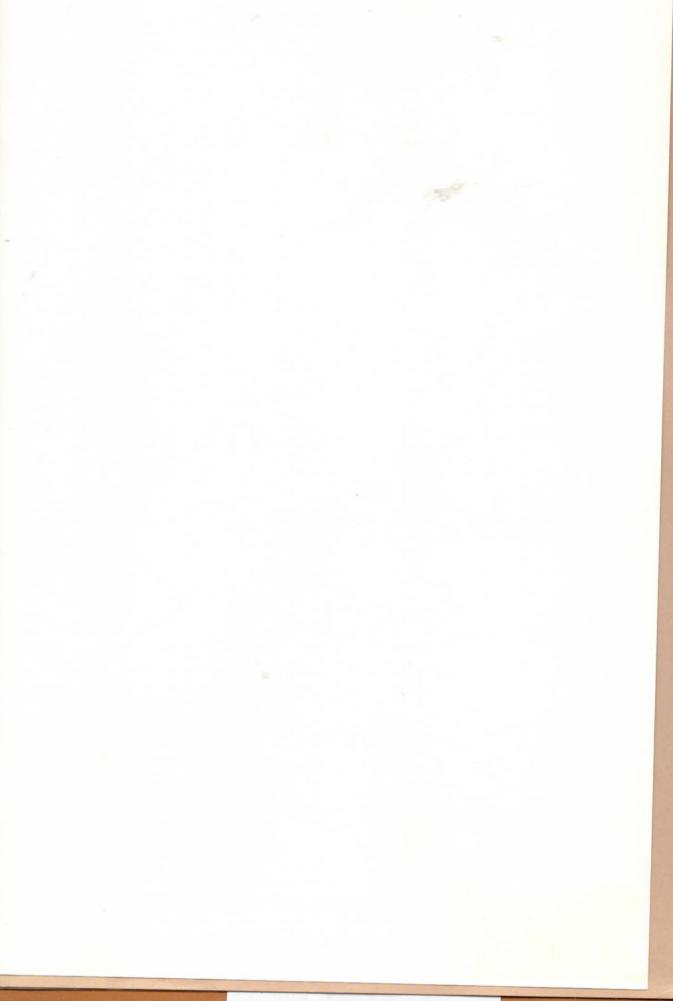
BRINKERHOFF AVE., IIITH AVE., NEW YORK BLVD., FOCH BLVD., 140TH AVE.

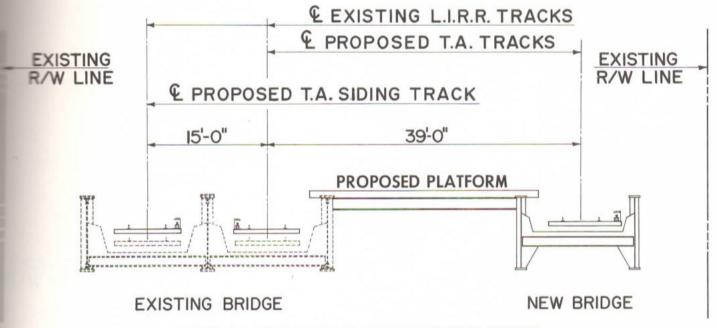
ALTERNATIVE - 2 SINGLE OCCUPANCY, N.Y.C.T.A. ROUTE 131-D ON ATLANTIC BRANCH



BRIDGE SECTION AT BAISLEY BLVD.

ALTERNATIVE - 2 SINGLE OCCUPANCY, N.Y.C.T.A. ROUTE 131-D ON ATLANTIC BRANCH

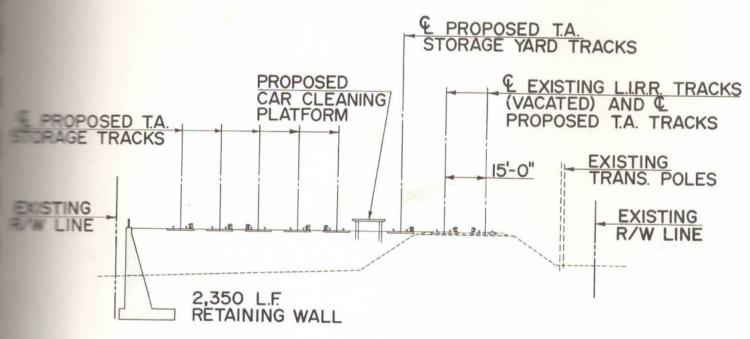




BRIDGE SECTION AT SPRINGFIELD BLVD.

*LTERNATIVE - 2 SINGLE OCCUPANCY, N.Y.C.T.A. ROUTE 131-D ON ATLANTIC BRANCH

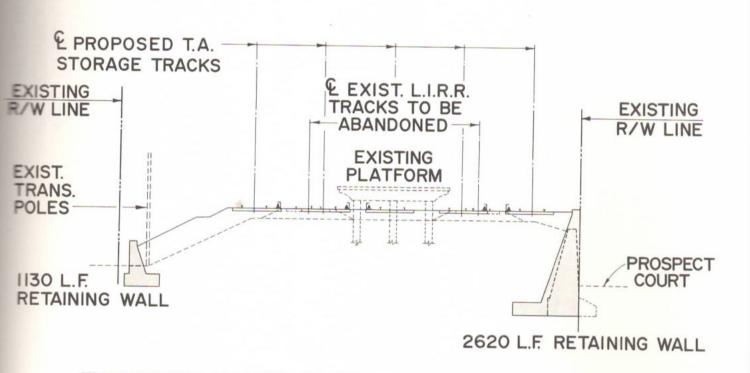




SERVICE AND STORAGE AREA

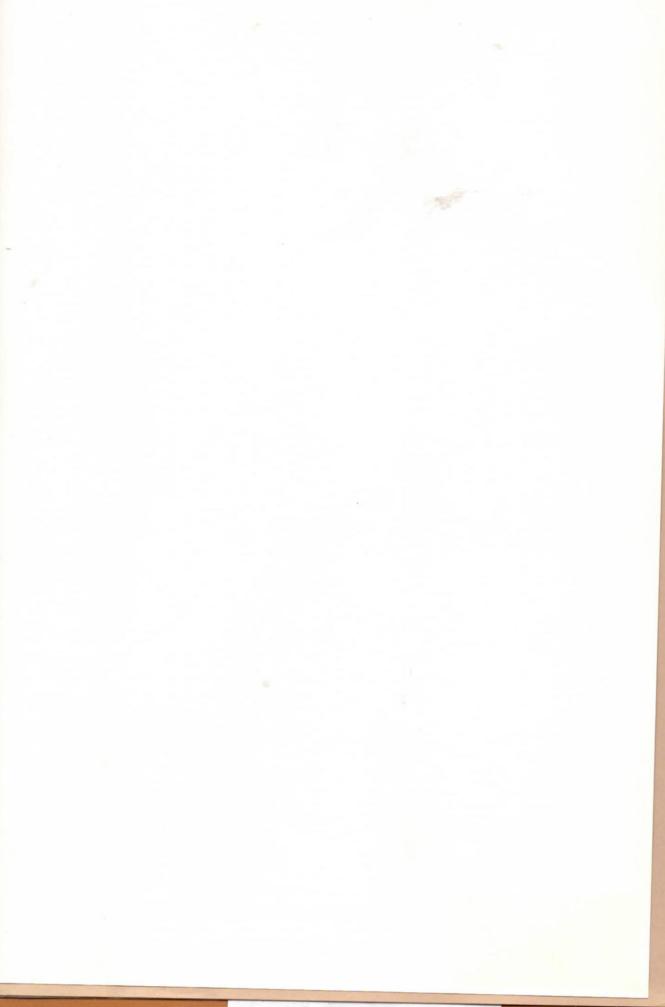
ALTERNATIVE - 2 SINGLE OCCUPANCY N.Y.C.T.A.

ROUTE 131-D ON ATLANTIC BRANCH



ALTERNATIVE - 2 SINGLE OCCUPANCY N.Y.C.T.A.

ROUTE 131-D ON ATLANTIC BRANCH



SINGLE OCCUPANCY OF ATLANTIC BRANCH
ESTIMATED CONSTRUCTION COST (MILLIONS)
(6/77 PRICES)

TVDL TO TOTAL DAIL

TYPE OF CONSTRUCTION	PROP.				-			
	COMM. SYSTEM	0.1	1.0	0.3	0.1	0.1	0.7	
	SIGNAL	2.1	2.2	3.3	2.1	3.7	13.4	
	POWER	3.1	1.2	6.2	Ξ	3.6	15.2	
	TRACK	0.5	0.3	1.0	0.3	3.2	5.3	70.0
	BRIDGES & OTHER STRUCTURES	 3.	0.0	1.3	1.2	2.6	6.6) 2
	WALLS	0.3	0.0	2.3	1.4	1.4	1.8	
	STATIONS	5.9	2.9	3.6	4,3	0.0	13.7	
	CIVIL	8.0	1.0	9.0	0.3	5.2	7.0	
	SECTION	SOUTH ROAD THRU	III TH AVENUE THRU FOCH BLVD.	FOCH BLVD. THRU FARMERS BLVD.	FARMERS BLVD. THRU SPRINGFIELD BLVD.	STORAGE AREAS	\$ SUB-TOTAL	\$ TOTAL
	ROUTE 131-D ON ATLANTIC BRANCH							



LIRR MAINLINE AND MONTAUK BRANCH

Alternative 2 involves the single occupancy of the Atlantic Branch by the MYCTA only after a third track is constructed and operational on the Montauk Branch. Existing passenger service on the Montauk Branch at St. Alban's and Springfield Gardens Stations will be discontinued when construction begins. An important requirement for the construction on the Montauk Branch is maintaining traffic on two tracks during peak hours. Since this requirement dictates much staging of traffic and relocation of existing track along with the necessary relocation of existing power, signal, and communication facilities, it is necessary to have both trackwork and linework advancing simultaneously from the beginning to the end of construction.

The purpose of the proposed third track on the Montauk Branch is to handle the additional traffic from the vacated Atlantic Branch. The third track will stem from an existing track along the Mainline. This conversion will be accomplished through relocation and realignment of the existing track between Sutphin Boulevard and the Jamaica Viaduct, which involves careful staging due to the volume of existing LIRR traffic. The grade of the existing track will be set to follow the grade of the existing viaduct at 170th Street (Jamaica Viaduct). A new viaduct for the proposed third track on the Montauk is to be constructed adjacent to the existing viaduct, which is to be maintained to carry the existing two tracks.

The alignment for the proposed third track through the viaduct area is composed of compound circular curves with $D=2^{\circ}-31'-30"$ and $D=3^{\circ}-12'-24"$. These compound circular curves are concentric with the existing tracks through the viaduct area. Vertical alignment conforms to the adjacent existing tracks. LIRR criteria for track geometry, requiring 80 mph design speed ($D=2^{\circ}-00'$), is used where feasible.



the viaduct area the alignment was set to achieve the maximum is 67 mph through the 2°-31'-30" curve and 60 mph through

The alignment of the proposed third track will be on the south side me existing viaduct track through Liberty Avenue. At the point of members t east of Liberty Avenue the new track will be aligned to occupy the south track, the existing south track will become the center track me existing north track will be relocated with new track on the north. me alignment of the existing two tracks were to be maintained and the proposed third track was built on the south side of these tracks, it would repaire the acquisition of construction easements from more than 90 properties the construction of a long retaining wall between Brinkerhoff Avenue and Linden Boulevard. The shifting of the proposed third track to the morth side will create conflicts with existing LIRR facilities, however, this condition will be heavily outweighed by the avoidance of encroachment om 90 private properties. Objections to the close proximity of the track and the increase in traffic volume will also be avoided by the shift. The same situation would occur between Baisley Boulevard and Farmers Boulevard where residential housing along the south side of the tracks consists of 80 private properties.

The alignment of the existing two tracks will be used extensively throughout the Montauk Branch. From a point approximately 200 feet west of Brinkerhoff Avenue to a point 330 feet west of Linden Boulevard, the existing alignment is used for the two southernmost tracks of the three-track system.

Track clearances for this section will be 14 feet, however, they will change on the approach to the Linden Boulevard Bridge due to the staging of the trackwork and construction in order to maintain traffic. The resulting clearance necessary between tracks will be 15'-6".



A proposed retaining wall will begin 280 feet west of Linden Boulevard on the north side of the tracks and continue in an easterly direction until it terminates at Merrick Boulevard. The purpose of this wall will be to keep the embankment for the proposed third track from spilling onto private property. This wall, being on LIRR right-of-way, will not be adjacent to residential property but will face either city streets or commercial property.

The alignment of the two existing tracks is maintained from Baisley

Boulevard eastward and terminates at Farmers Boulevard. The alignment of

the proposed third track parallels the existing tracks through the area.

The track clearances set at Baisley Boulevard Bridge will be 17'-9" between the proposed and center tracks and 14 feet between the existing tracks. Track clearances set at 120th Avenue will be 15 feet between the proposed and center tracks and 14 feet between the existing tracks.

From here, the third track will be placed on the south between Farmers and Merrick Boulevard. This is done to avoid encroachment beyond the right-of-way line in the Springfield Gardens Station area and to meet the existing alignment at 141st Avenue. Reverse curves used to make the shift to the south, will precede the tangent at Merrick Boulevard on the approach to the station area.

The track clearances at the Farmers Boulevard Bridge will be 17'-9" between the proposed and center tracks and 14'-0" between the existing tracks. Due to the shift in alignment, these clearances will be reversed at the Merrick Boulevard Bridge with a clearance of 14 feet between the existing tracks and 17'-9" between the center and proposed tracks.

The alignment of the northernmost existing track is maintained from Merrick Boulevard through the Springfield Gardens Station area to a point approximately 440 feet west of 141st Avenue.



Severse curves will be used on the other two tracks to set the clearance the Springfield Boulevard Bridge at 19'-9" between the existing tracks

13'-6" between the center and proposed tracks.

Retaining walls are proposed along both right-of-way lines of the

LIRR from Farmers Boulevard to Merrick Boulevard, and along the south

right-of-way from Merrick Boulevard to Springfield Boulevard. These

walls are required to keep the embankments within the existing right-of-way

line. The wall that will run along the southern right-of-way line will face

commercial property. Reverse curves on the two southernmost tracks between

Springfield Boulevard and 219th Street will be used to set the clearance

for the 219th Street Bridge at 14 feet between the existing tracks and

17'-9" between the center and proposed tracks. These, as well as the other

bridge clearances, will be set to facilitate the necessary trackwork and

construction in order to maintain traffic on the existing bridge during the

addition of the proposed third track.

The alignment of the existing tracks will be maintained from 219th Street to a point approximately 240 feet west of 141st Avenue. A reverse curve will be used on the alignment of the proposed third track between 219th Street and 141st Avenue to set the clearances of the tracks in this area at 14 feet between all three tracks.

Retaining walls are proposed along the southern right-of-way line of the LIRR from a point 150 feet east of Springfield Boulevard to 219th Street and from 219th Street to 141st Avenue. The purpose of the walls is to maintain the embankment for the proposed third track.

The alignment of the northernmost existing track will be changed, starting approximately 440 feet west of 141st Avenue. A proposed curve with D = 2° -13'-27" will be preceded by a spiral transition curve with a length of 750 feet. The alignment of both the southernmost existing track



and the proposed third track will change approximately 240 feet west of 141st Avenue. The alignment for the proposed center track involves a circular curve with $D = 2^{\circ}-11'-46"$, preceded by a 400-foot spiral transition curve. The alignment for the proposed third track involves a circular curve with $D = 2^{\circ}-10'-32"$, preceded by a 400-foot spiral transition curve.

The alignment of these three proposed tracks sets the track clearances between them for the 141st Avenue Bridge at 16 feet. The track clearances for 225th Street will be 18 feet between the proposed and center tracks and 14 feet between existing track. The purpose for the realignment of the tracks is to avoid reconstruction of the bridge at North Conduit Avenue. The proposed track alignment will make a smooth transition into existing curved track. This transition will be made just west of the bridge at North Conduit Avenue. Therefore, the alignment for the three-track system on the Montauk Branch will follow existing alignment from the North Conduit Avenue Bridge eastward.

A new freight track is also proposed along with the third track. This freight track will originate from the Holban Yard and extend 200 feet beyond 114th Avenue. Number 10 crossovers are to be provided to facilitate maneuvers to the three main tracks. A relocation of the power poles on the north side will be necessary since a tower and four poles are in conflict with the new third track.

Construction and trackwork at the bridges will be greatly simplified if the existing structure is maintained for the two existing tracks and a new and separate bridge is built for the proposed third track. This requires 17'-9" track spacing between the proposed third track and the adjacent existing track in order to maintain (inspect and paint) the two adjacent girders. Bridges at Baisley Boulevard, Farmers Boulevard, Merrick



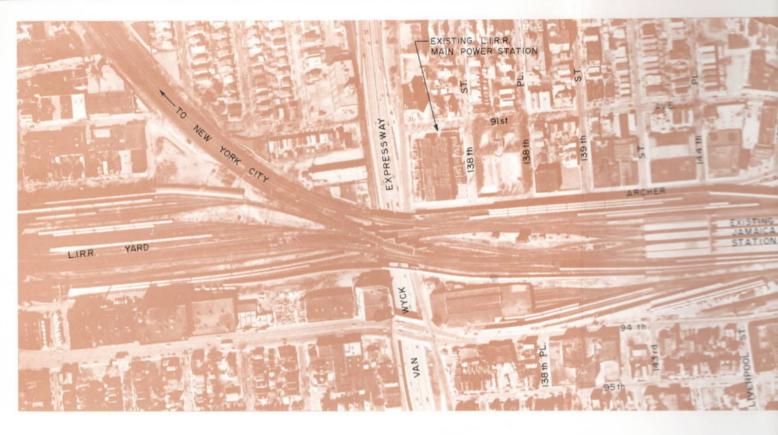
Boulevard, and 219th Street will employ this concept. However, this separate bridge concept cannot be accomplished at Linden Boulevard, 120th Avenue, Springfield Boulevard, 141st Avenue and 225th Street and the construction and trackwork must be staged to maintain traffic.

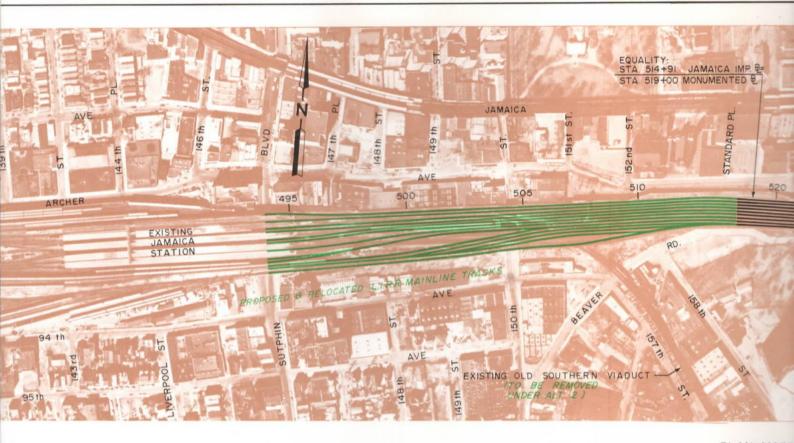
Conflicts with the existing LIRR transmission towers occur between Liberty Avenue and Linden Boulevard and also between Baisley and Farmers Boulevards. Existing transmission towers between these two boulevards will require relocation.

The estimated construction cost of the Montauk Branch construction is \$64.6 million (Table 4-C) plus the \$70.0 million (Table 4-B), bringing the total combined cost for Alternative 2 to \$134.6 million (see Table 4-C). The major cost involved, aside from trackwork, power, signals, and communications, which were provided by the LIRR, is the cost of bridge renovation, which is \$14.9 million. The Montauk construction comprises 48 percent of the total cost of Alternative 2.



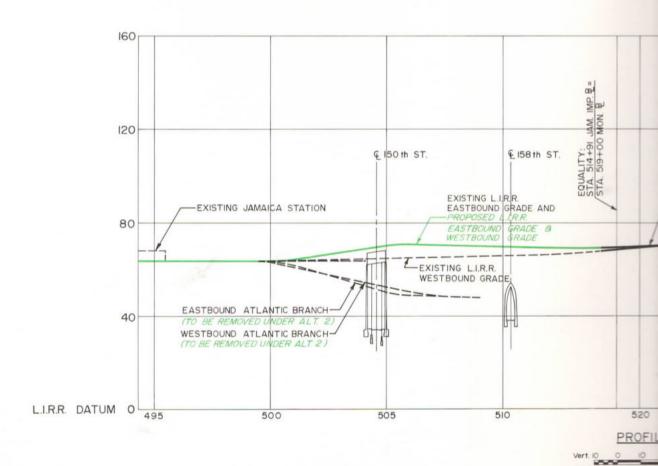






PLAN-MAIN

Horiz 100

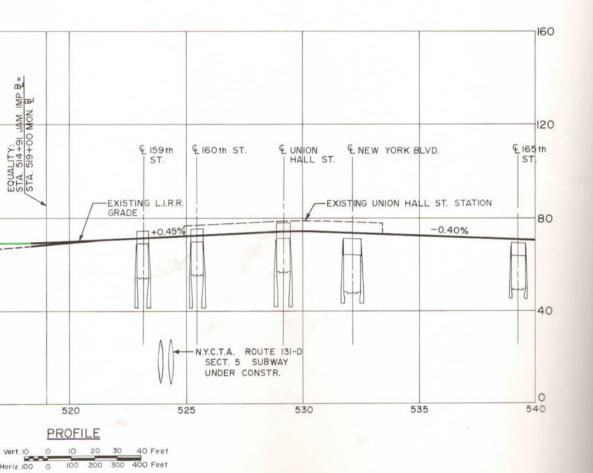




PLAN-MAINLINE

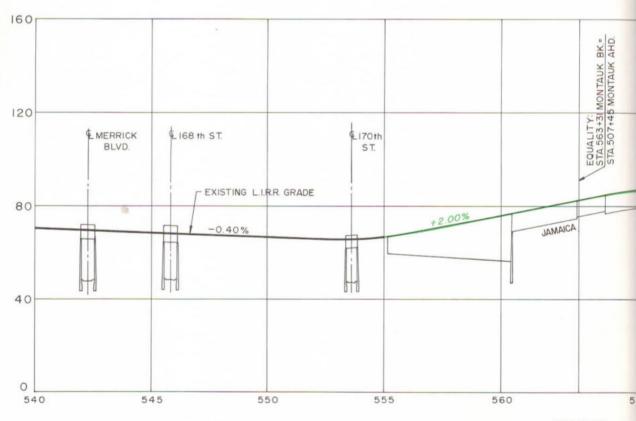
100 200 300 400 Feet

0





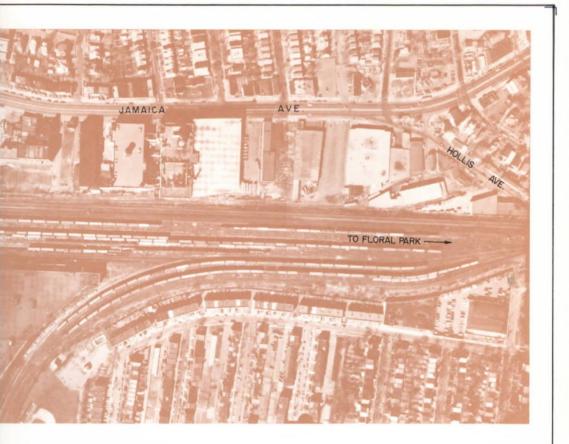
PLAN - MAINLINE & MONTAUK BRA



PROFILE



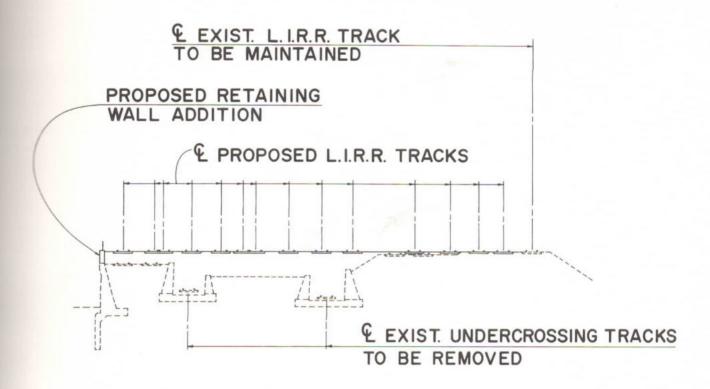




NYCTA ROUTE 131-D

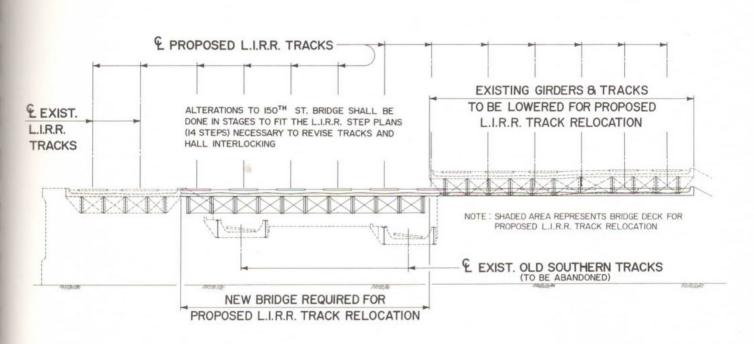
ALT. 2 SINGLE OCCUPANCY ON ATLANTIC BRANCH AND L.I.R.R. 3RD TRACK ON MONTAUK BRANCH PLAN & PROFILE STA. 500 TO STA. 528





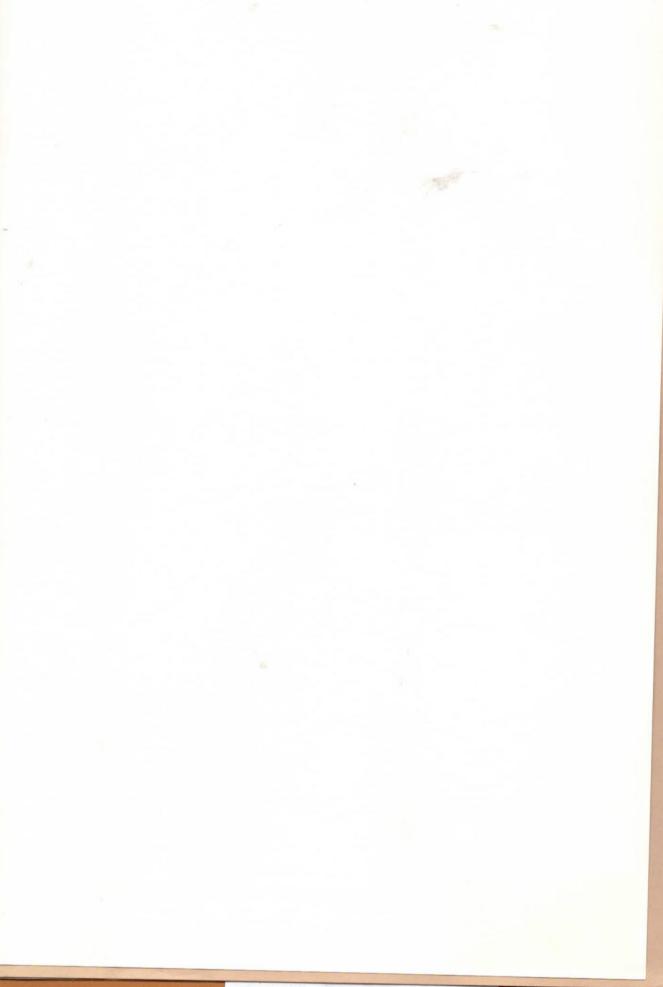
EMBANKMENT SECTION AT STA. 503+60

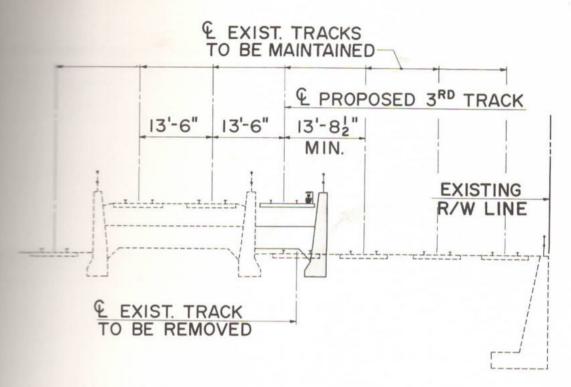
ALTERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH



BRIDGE SECTION AT 150TH STREET

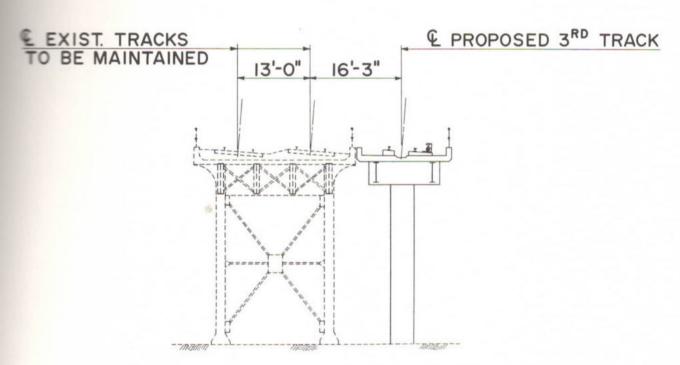
ALTERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH





TYPICAL SECTION THRU JAMAICA VIADUCT APPROACH 540 L. F. VIADUCT APPROACH WALL

MATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH

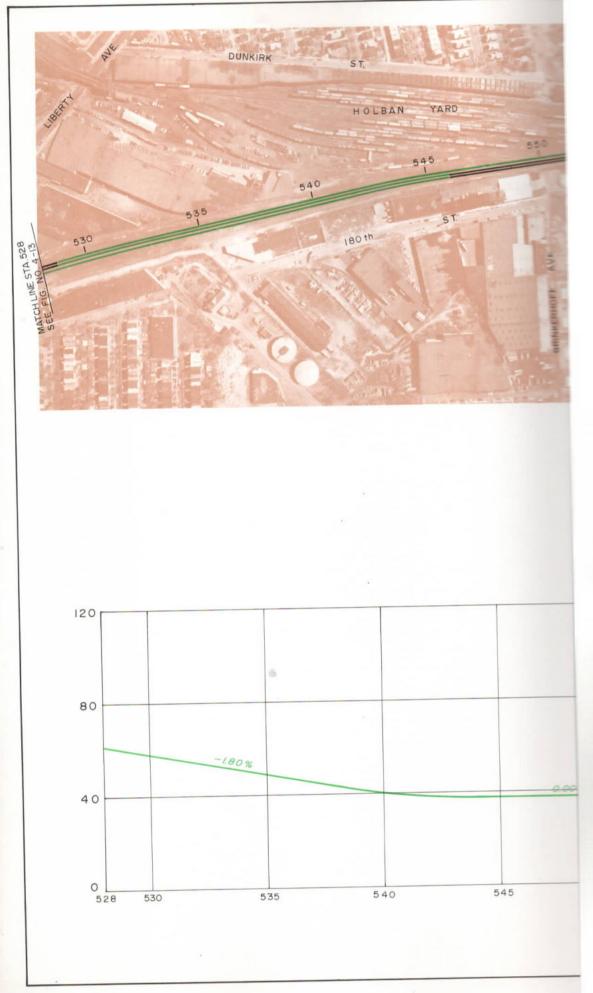


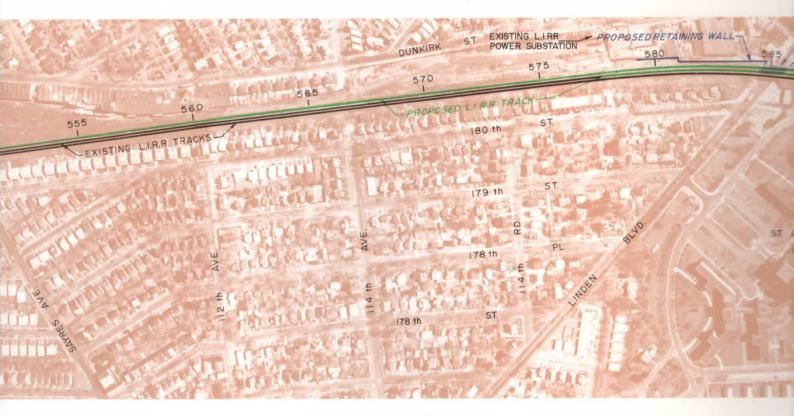
TYPICAL SECTION THRU JAMAICA VIADUCT
1920 L. F. VIADUCT STRUCTURE

ALTERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH

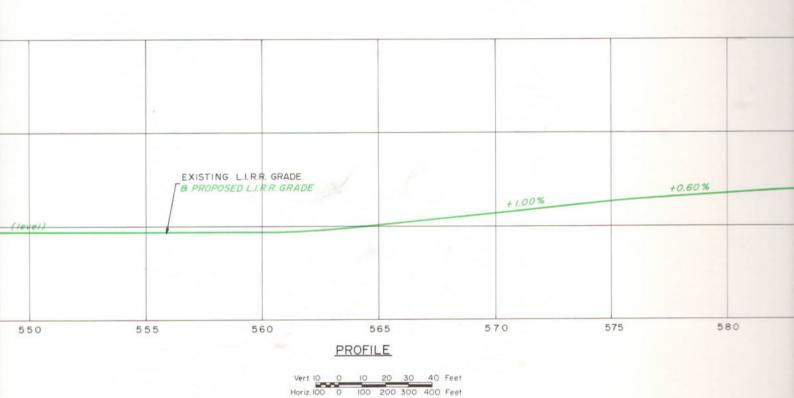


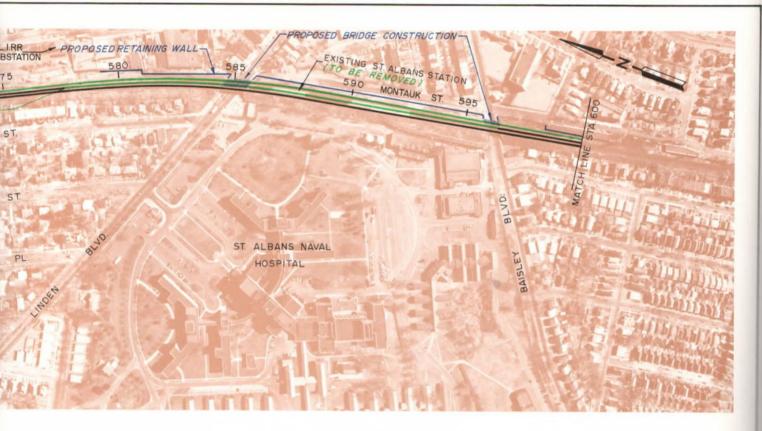


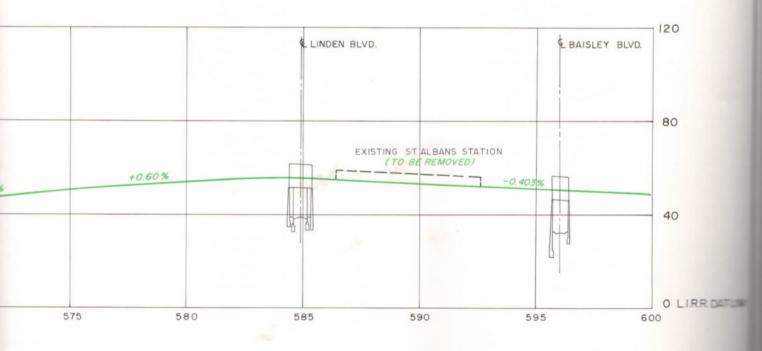


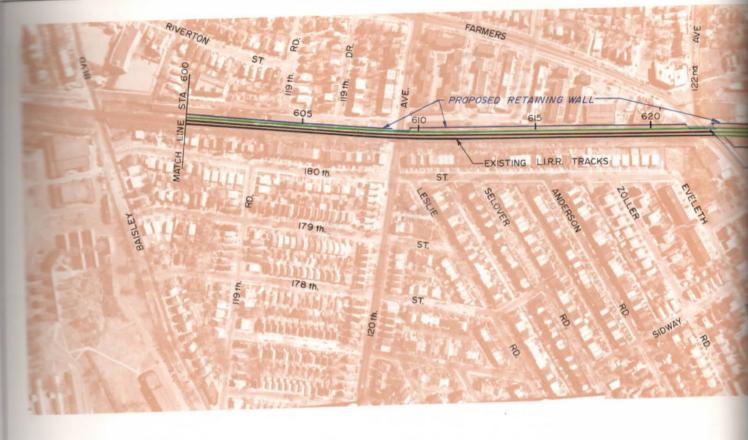


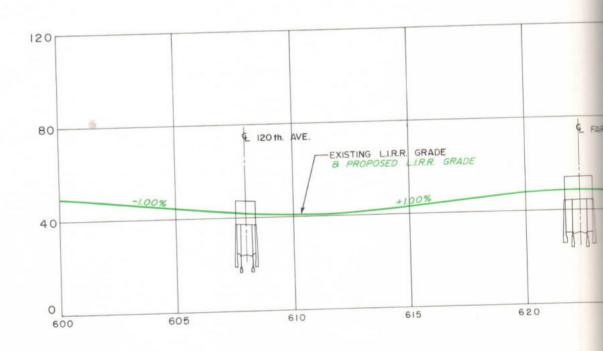
PLAN - MONTAUK BRANCH

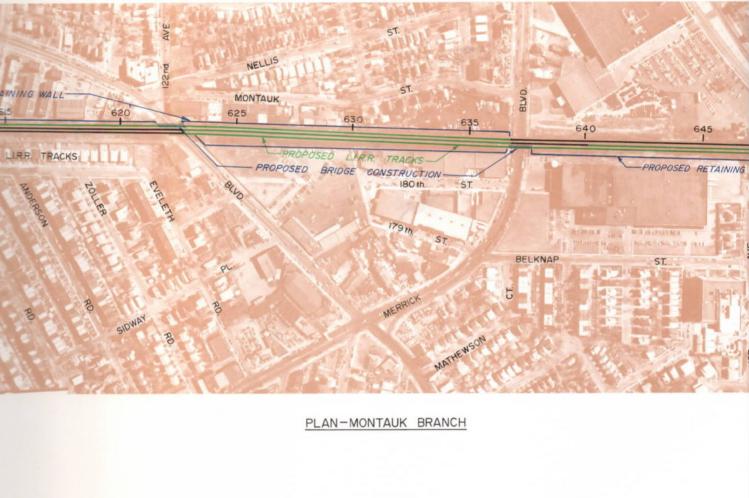


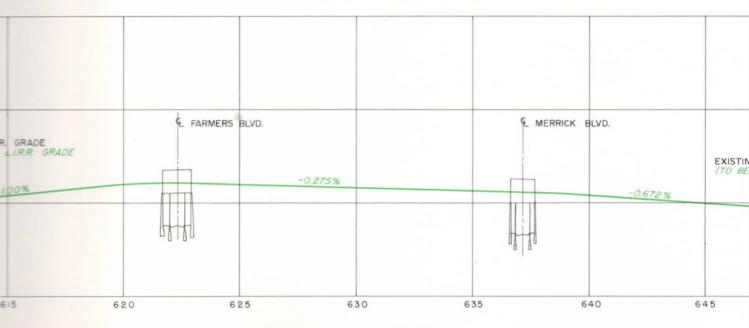






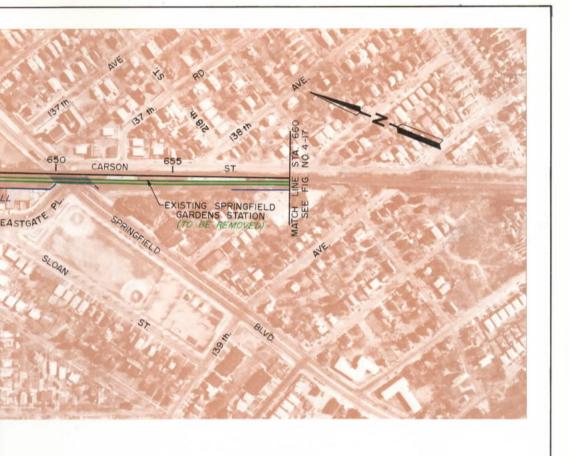


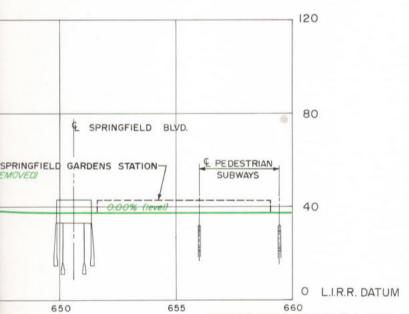




PROFILE

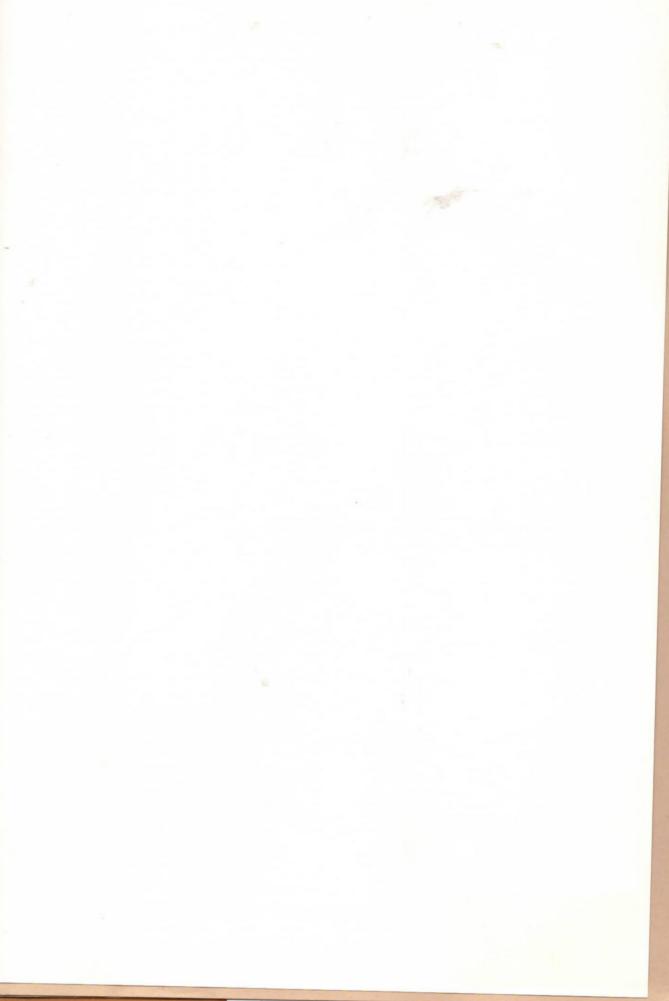
Vert. 10 0 10 20 30 40 Feet Horiz. 100 0 100 200 300 400 Feet



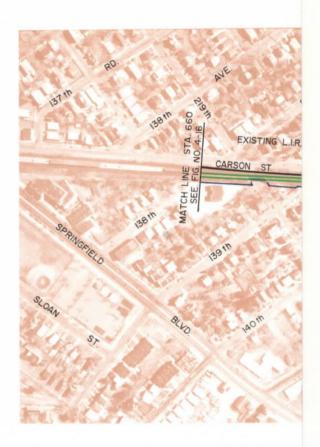


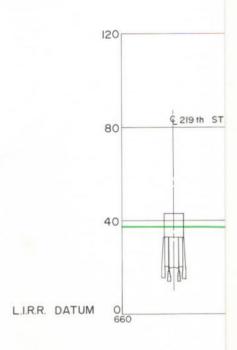
NYCTA ROUTE 131-D

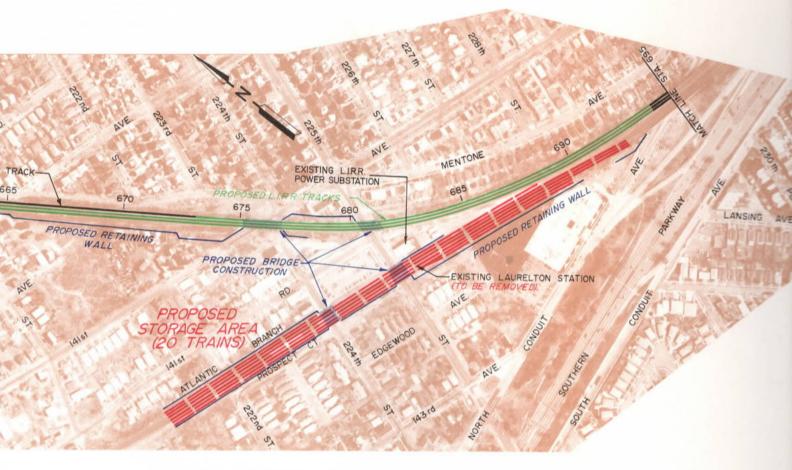
ALT. 2 SINGLE OCCUPANCY ON ATLANTIC BRANCH AND L.I.R.R. 3RD TRACK ON MONTAUK BRANCH PLAN & PROFILE STA. 528 TO STA. 660



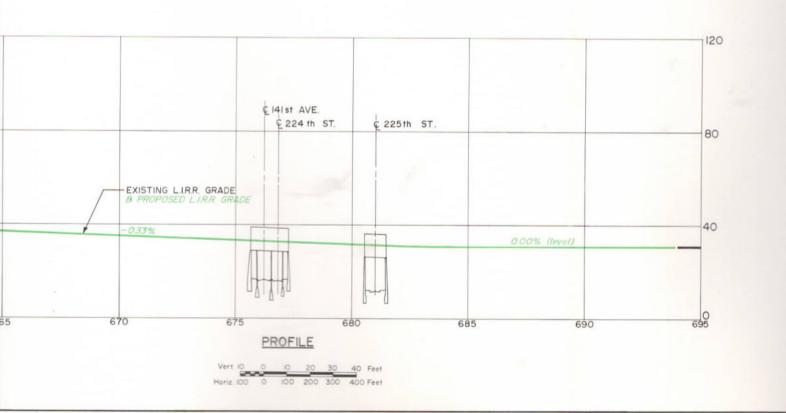


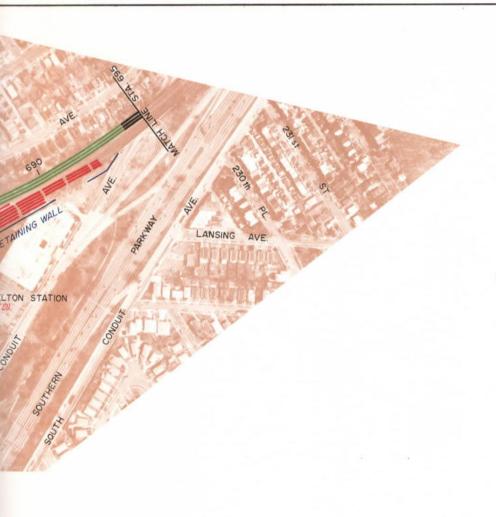






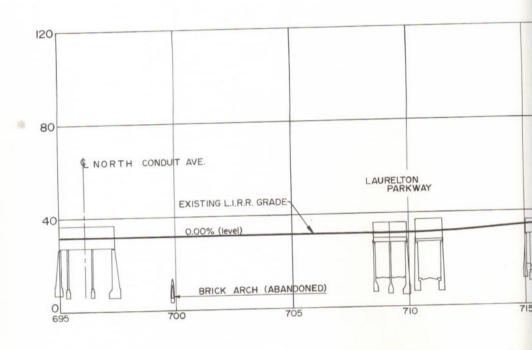
PLAN - MONTAUK BRANCH





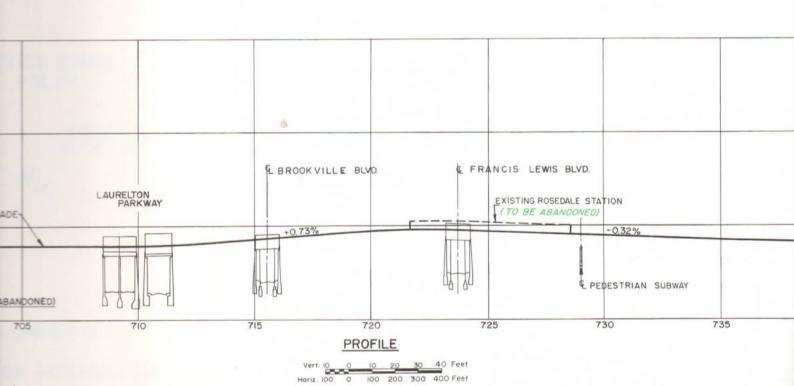


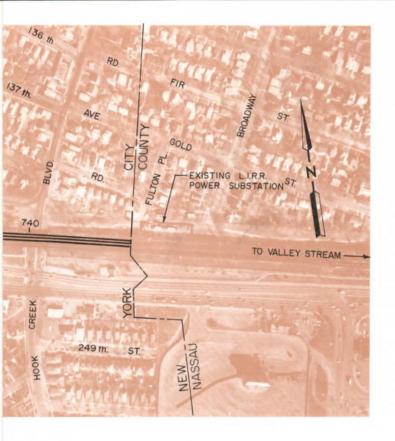


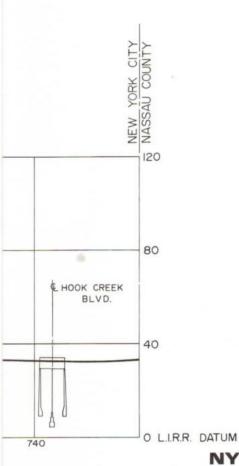




PLAN - MONTAUK BRANCH



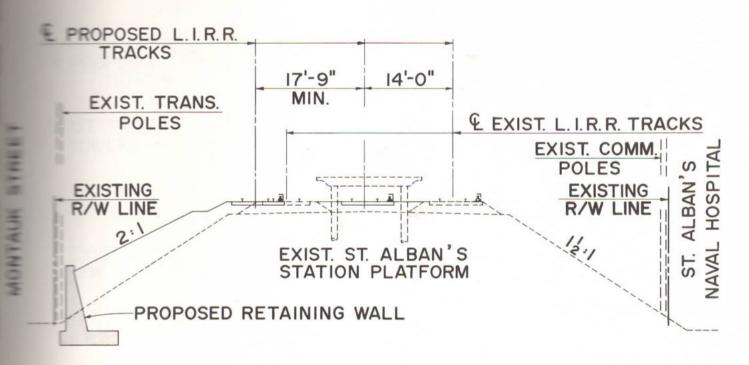




NYCTA ROUTE 131-D

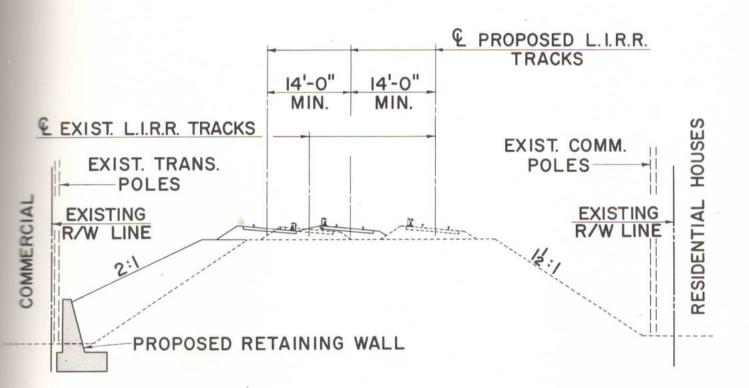
ALT. 2 SINGLE OCCUPANCY ON ATLANTIC BRANCH AND L.I.R.R. 3RD TRACK ON MONTAUK BRANCH PLAN & PROFILE STA. 660 TO STA. 740





EMBANKMENT SECTION-LINDEN BLVD. TO BAISLEY BLVD.

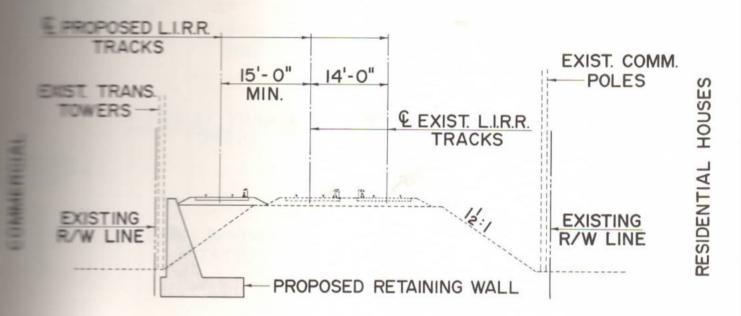
**ITERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH



EMBANKMENT SECTION - BRINKERHOFF AVE. TO LINDEN BLVD.

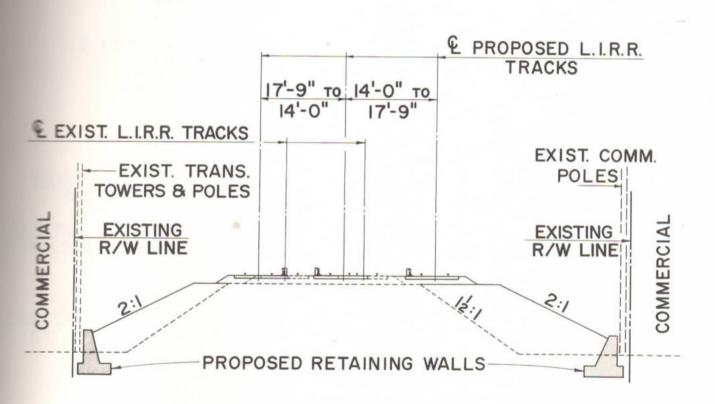
ALTERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH FIG. 4-18





EMBANKMENT SECTION - BAISLEY BLVD. TO FARMERS BLVD.

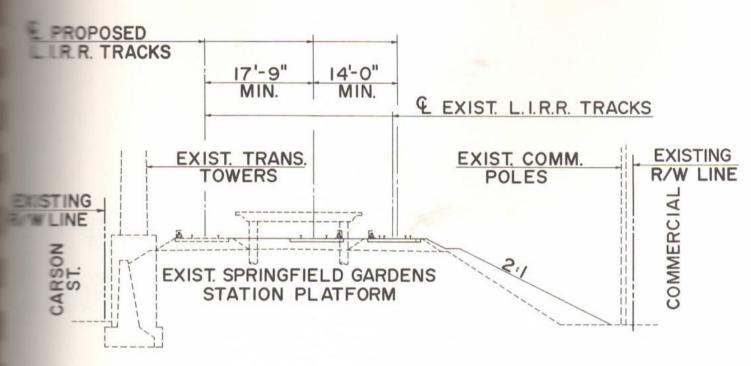
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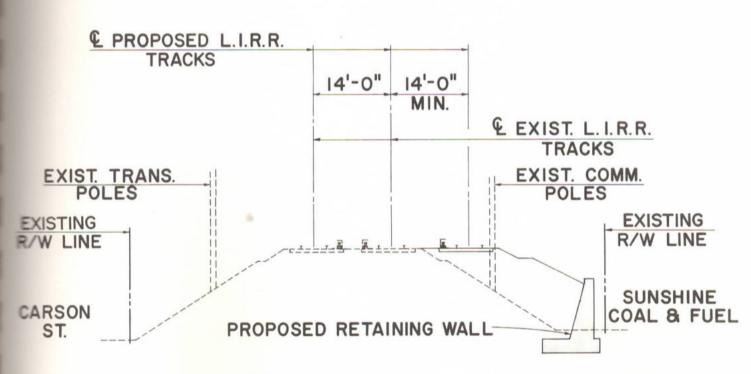
EMBANKMENT SECTION - FARMERS BLVD. TO MERRICK BLVD.

LTERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH
FIG. 4-19



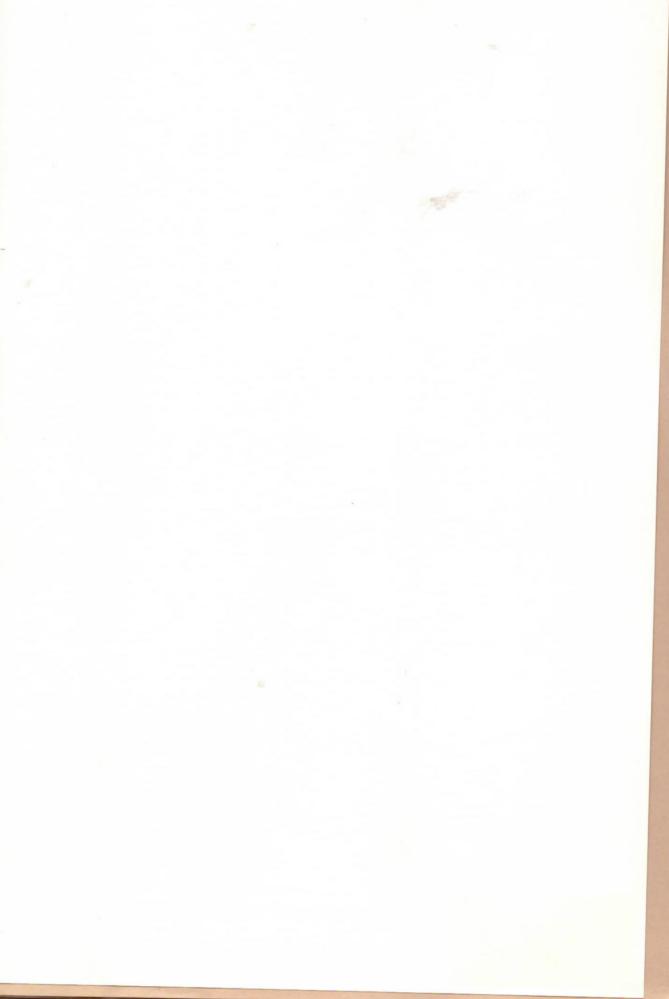


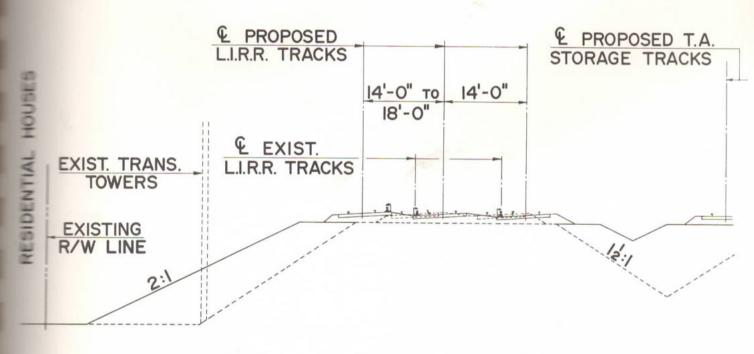
EMBANKMENT SECTION-MERRICK BLVD. TO 219TH ST.



EMBANKMENT SECTION - 219TH ST. TO 141STAVE.

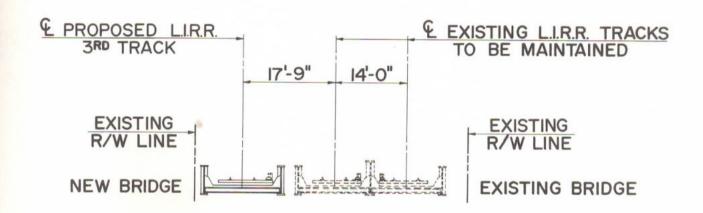
ALTERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH





EMBANKMENT SECTION-141STAVE, TO LAURELTON PKWY.

ALTERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH

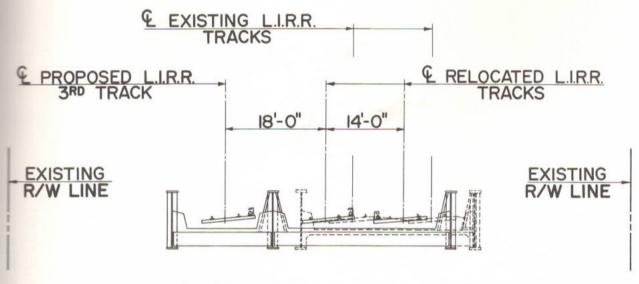


TYPICAL BRIDGE SECTION

BAISLEY BLVD., 120TH AVE., FARMERS BLVD., MERRICK BLVD., 219TH ST.

ALTERNATIVE - 2 SINGLE OCCUPANCY, L.I.R.R. 3RD TRACK ON MONTAUK BRANCH

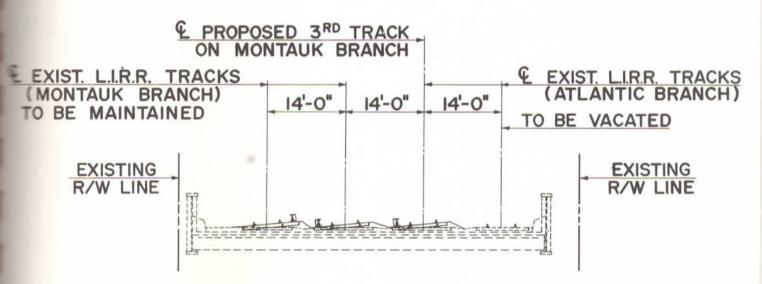




BRIDGE SECTION AT 225TH STREET

LINDEN BLVD., SPRINGFIELD BLVD., 1418T AVE.-SIMILIAR

LIERNATIVE - 2 SINGLE OCCUPANCY L.I.R.R. 3RD TRACK ON MONTAUK BRANCH



BRIDGE SECTION AT NORTH CONDUIT AVENUE

**LTERNATIVE - 2 SINGLE OCCUPANCY, L.I.R.R. 3RD TRACK ON MONTAUK BRANCH



ALTERNATIVE - 2
LIRR-MAIN LINE & MONTAUK BRANCH
ESTIMATED CONSTRUCTION COST (MILLIONS)
(6/77 PRICES)

TYPE OF CONSTRUCTION	COMM. FLAG SYSTEM PROT.					9.0	
				*		0.9	
	SYSTEM		d	A	-	11.0	
	POWER					8.0	
	TRACK					15.3	64.6
	BRIDGES	5.6	4.4	1.7	6.2	14.9	
	WALLS	0.0	0.4	2.8	3.9	7.1	
	STATIONS	0.0	0.0	0.0	1.1	-:-	
	CIVIL	0.2	0.3	2.2	2.9	5.5	
	SECTION	MAIN LINE	JAMA I CA V I ADUCT	MONTAUK BRANCH LIBERTY AVE. THRU FARMERS BLVD.	MONTAUK BRANCH FARMERS BLVD. THRU N. CONDUIT	\$ SUB-TOTAL	\$ TOTAL
		HAIN LINE AND MONTAUK BRANCH					

SUMMARY (MILLIONS)

(FROM TABLE 4B)	(FROM TABLE 4C)	
70.0	64.6	134.6
ROUTE 131-D ON ATLANTIC BRANCH	LIRR MAIN LINE & MONTAUK BRANCH	TOTAL \$



COMPARISON OF ALTERNATIVES

The comparison of Alternatives 1 and 2 shows that Alternative 2, with single NYCTA occupancy of the Atlantic Branch, provides the best solution for the extension of rapid transit rail service to the area. Although both alternatives provide the necessary transit facilities, fulfill the NYCTA storage and maintenance requirements, and provide uninterrupted LIRR service, Alternative 2 results in the most economical solution with less disruption to the community, and, through separation of the lines, streamlines both operations.

Atlantic Branch right-of-way. This increase from two existing LIRR tracks to four tracks (two LIRR, two NYCTA) has an undesirable impact on the surrounding area, which is presently undergoing major redevelopment. As previously described, 241 private properties are affected by the necessary acquisition of additional right-of-way, either through complete or partial taking. This differs radically from Alternative 2, where only 22 properties are affected by construction of the two separate lines. The difference in the cost of property acquisition between the two alternatives is only one factor. The social implications of disruption and relocation are often more traumatic and far-reaching.

Noise control measures are proposed in the design of either alternative. However, Alternative 2, by virtue of traffic distribution to both lines, better diffuses the noise. The Atlantic Branch would be more severely affected with the greater traffic concentration under Alternative 1. Positive noise abatement measures are proposed for both lines by converting jointed rail to continuously-welded rail.



Alternative 2 provides a greater opportunity to effectively integrate the NYCTA's facility within the community. Station aesthetics, landscaping, etc., may be more readily implemented under Alternative 2. Alternative 1 requires large walls and materially greater widths thus posing a harsher visual impact on the community.

Alternative 2, which proposes to eliminate the existing Old South Viaduct, affords Jamaica Redevelopment Authority the opportunity to develop this land for the proposed Queens Hospital or provides the opportunity for future development of this land to a use appropriate to the adjacent York College.

Alternative 1, joint occupancy of the Atlantic Branch, causes congestion due to close proximity of high density operating tracks which could result in one line's activity in operations and maintenance affecting the other.

Separation of the lines as in Alternative 2 provides for independence of operation and maintenance.

The estimated construction cost of Alternative 1 is \$147.8 million; the estimated construction cost of Alternative 2 is \$134.6 million, resulting in a \$13.2 million savings by constructing Alternative 2. This disparity is essentially the result of construction with simultaneous maintenance of LIRR traffic on adjacent tracks. Temporary run-arounds and staged construction are necessary during construction to maintain traffic. The construction of stations and bridges requires considerable shoring and sheeting to maintain traffic on adjacent tracks.

Every effort was made during the determination of alignment to utilize as much of the existing facilities as possible. Most of the existing LIRR track is maintained in Alternative 1; the alignment is altered only to remain within the right-of-way. Alternative 2 places

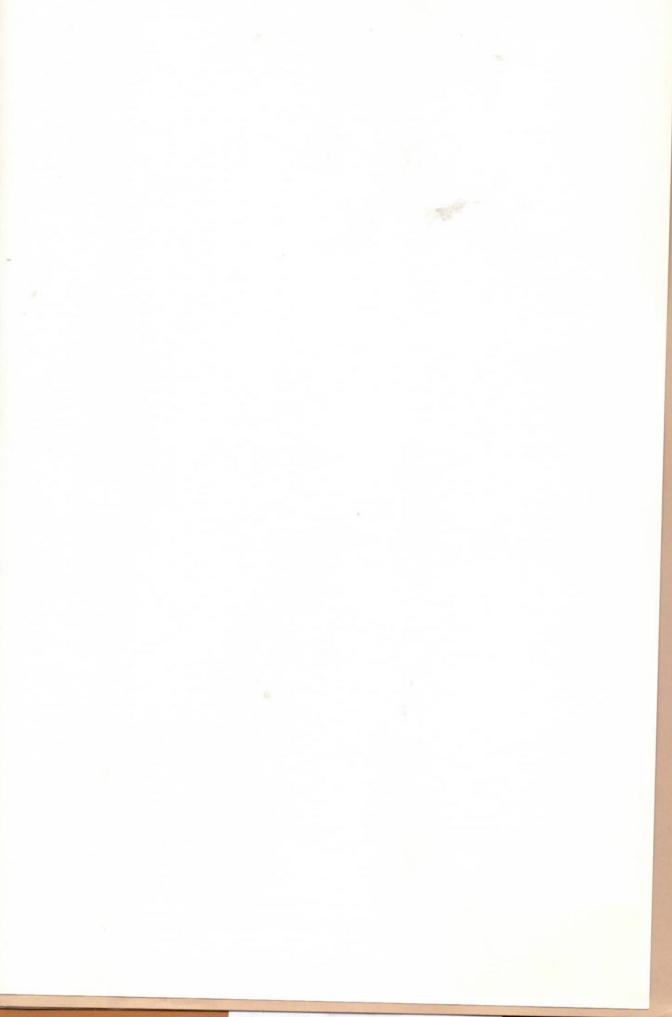


the NYCTA trains on the existing LIRR Atlantic Branch tracks and modifies the alignment only where grade and station location require. The basic premise of the Montauk alignment is also the utilization of the existing facilities coupled with the new third track construction. Both alternatives require the construction of new track for storage and maintenance areas on Route 131-D.

The underjump to the below-ground storage area adjacent to Farmers Boulevard is necessary to cross the LIRR tracks in Alternative 1. This results in very expensive retaining wall and cut and cover tunnel construction, requires closing Farmers Boulevard during construction, and requires underpinning the existing bridge. The only access to the storage area would be through the underjump, forcing NYCTA trains to backtrack to Springfield Boulevard before traveling west and trains proceeding east to back up through the lap switch to enter the storage area. This further illustrates the limited operations provided by this alternative.

The Alternative 2 storage area next to Farmers Boulevard is an above-ground facility requiring embankment construction. Access is provided at both ends of the yard and the yard is connected to Springfield Station by a siding track paralleling the revenue tracks. Operations under this alternative are efficient; trains need not back up on mainline tracks to enter the yard, but may switch directly to the siding and proceed from there. Special structures are not required for the storage yard except bridge widenings to accommodate the siding track. This accounts for part of the \$20.4 million cost difference for storage areas between the two alternatives.

A comparison of train storage beyond Springfield Boulevard shows similar results. A very large storage area on embankment within large retaining walls is required for Alternative 1. This storage area requires the acquisition of several city blocks and the closing of several city streets



meet to meet the train storage requirements. The availability of the entire existing right-of-way section for the storage area in Alternative 2 does not require the acquisition of any private property.

Renovations and additions to the Power, Signals and Communications

equipment are more costly under Alternative 2. This is essentially due to

the need to relocate the LIRR facilities to the Montauk Branch. However,

the linework on the Atlantic Branch is greatly simplified by the elimination

of adjacent traffic during construction. The maintenance of LIRR traffic

on the Montauk Branch is easier because less overall work is required by

maintaining the existing track configuration for the majority of the route.

It should be noted that this cost disparity is more than counterbalanced by

the additional costs of civil work, stations, walls and bridges for

Alternative 1.

Although similar station locations for Route 131-D are used for each alternative, the absence of the LIRR enables the stations to be located at the best possible location within their quadrants, thereby providing maximum effectiveness for passenger access. An example of this is Linden Boulevard Station where the absence of the LIRR enables the station to be located closer to the intersection of Linden and New York Boulevards.

Thus, Alternative 2 provides the best method of transit service to the area. It is superior to Alternative 1 technically and economically, and causes the least impact to the surrounding area. Alternative 2 is more closely detailed in the following section.



SECTION 5

DESCRIPTION OF RECOMMENDED ALTERNATIVE - 2



STATIONS

The proposed station design to be implemented for the proposed Route

131-D will consist of a two-level above-ground structure. The structure

131-D will consist of a two-level above-ground structure. The structure

131-D will consist of a two-level above-ground structure. The structure

131-D will consist of a two-level above-ground structure. The structure

131-D will consist of a two-level above-ground structure. The structure

131-D will consist of a two-level above-ground structure. The structure

131-D will consist of a two-level above-ground structure. The structure

142-D will consist of a two-level above-ground structure. The structure

143-D will consist of a two-level above-ground structure. The structure

143-D will consist of a two-level above-ground structure. The structure

143-D will consist of a two-level above-ground structure. The structure

143-D will consist of a two-level above-ground structure. The structure

143-D will consist of a two-level above-ground structure. The structure

143-D will consist of a two-level above-ground structure. The structure

144-D will consist of a two-level above-ground structure. The structure

145-D will consist of a two-level above-ground structure. The structure

145-D will consist of a two-level above-ground structure. The structure

145-D will consist of a two-level above-ground structure. The structure

145-D will consist of a two-level above-ground structure. The structure

145-D will consist of a two-level above-ground structure. The structure

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145-D will consist of a two-level above-ground structure. The structure

145-D will consist of a two-level above-ground structure. The structure

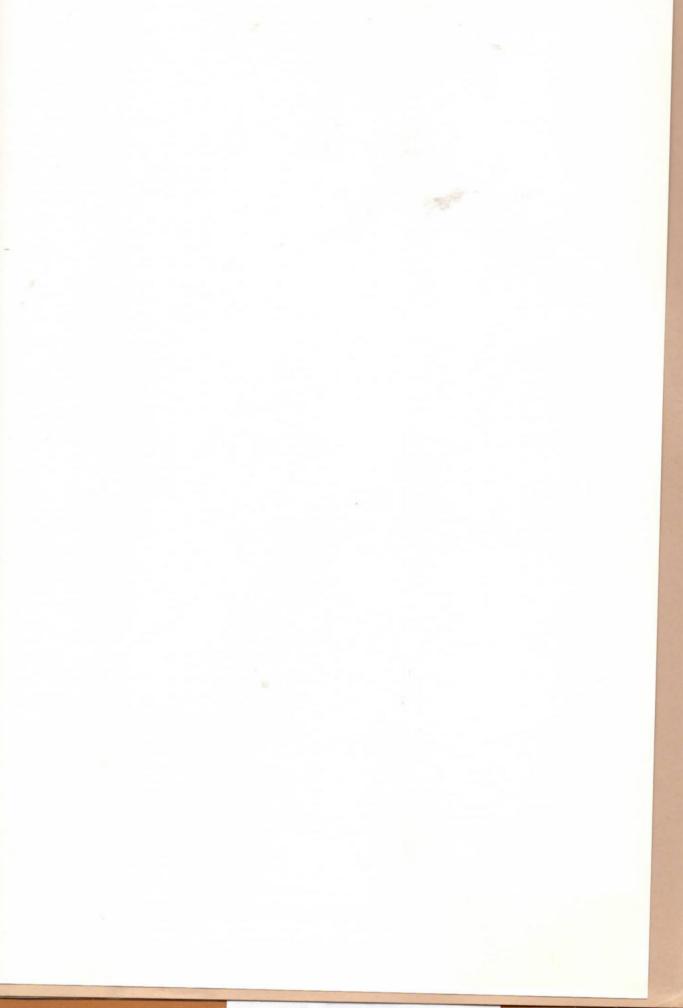
145-D will consist of a two-level above-ground structure. The structure

145-D will consist of a two-level above-ground structure. The structure

145-D will consist of a two-level above-ground structure. The structure are structure.

145-D will consist of a two-level above-ground structure. The s

Spaciousness is proposed as a major design feature of all the stations for Route 131-D. An "open area" concept will be used in the station service area to provide patrons with ample waiting room, close proximity to the concession area, and a full view of other facilities available to them. Attractiveness will also be a major concern for station design. The above ground station concept will allow daylight to enhance the station interior by the use of large windows and skylights. Smooth, glazed brick contrasted against rough, concrete walls may be employed to accent the natural and artificial lighting in the station. Graphics to be used to instruct the patrons will be done in contrasting colors and will follow the standards set by the Transit Authority. Brightly colored murals may be used as directional devices to aide in focusing the patron's attention to the correct passenger flow pattern. Figure 5-7 shows an exterior perspective of the station at Linden Boulevard. The three additional stations proposed at 108-109th Avenues, Baisley Boulevard, and Springfield Boulevard will follow the same basic design.



A large portion of the station facility is comprised of two major

The "free or unpaid area" and the "paid area". Refer to the cut
Wiews of the side and island platforms in Figures 5-6 and 5-15 for

The reference to these particular areas. As shown in these figures, patrons

It enter this area (the "free area") and proceed to the token booth

Durchase the necessary fare. Prospective passengers may then move to

"paid area", where they may wait for their particular train. The

Loading platform is reached by means of elevators, escalators, or stairways.

The elevator is to be used for those handicapped patrons who have difficulty

in moving to the loading platform under their own capacity. A protective

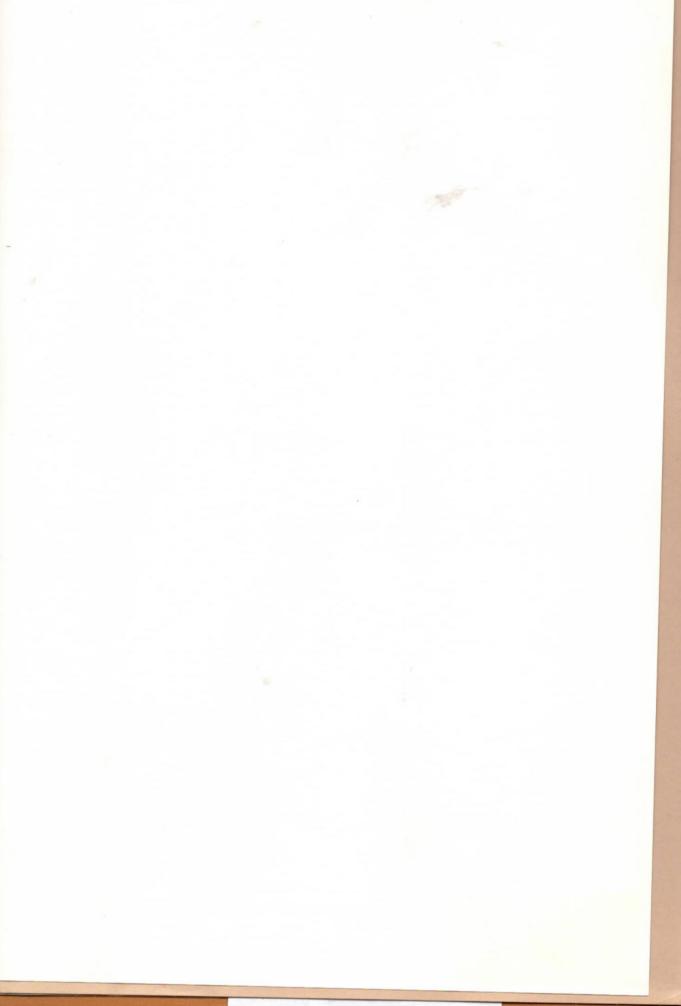
canopy will be used to protect the passengers from inclement weather while

getting on and off the transit car. Heating and air conditioning will be

provided at street level for each station.

Closed circuit television cameras will be used throughout the station for security purposes. The ticket agent will have monitoring equipment in the ticket booth so that he has a full view of the entire station area. Figure 5-10 shows the view that the ticket agent has without the aid of the television monitoring system.

Vertical circulation at all stations will consist of two stairways, two escalators and either one or two elevators for the handicapped and elderly. Stairway widths shall be determined by the projected patronage but shall not be less than 8 feet. Non-slip finishes will be used on all stairway treads to prevent possible injury to patrons. Reversible escalators may be operated as both up or down providing rapid movement of prospective passengers from the "paid area" to the loading platform of the station. Sprinkler systems and emergency shut-off switches are among other safety features incorporated into the design of the escalator. See Figure 5-21 for escalator and stairway details.



Side platforms will be used for stations at 108th-109th Avenues,

Linden Boulevard, and Baisley Boulevard. An island platform will be used

for the terminal station at Springfield Boulevard. All platforms will be

provided with canopies and windbreakers and will have a minimum clear height

to the canopy of 11 feet. The minimum width of the side platform will be

12 feet which meets the NYCTA specified minimum. The width of the island

platform at Springfield Boulevard Station will be 30 feet. However, the

additional 5 feet allows for 7'-6" platforms, adjacent to trains, along the

sides of the escalator-stairway entrance. See Figure 5-21. The length

of both the side and island platforms will be 615 feet which will accommodate

an eight-car train.

Rooms required by the NYCTA for each station are shown in the respective station plans as follows: 108th-109th Avenue Station, Figures 5-2, 5-3; Linden Boulevard Station, Figures 5-8, 5-9; Baisley Boulevard Station, Figures 5-12, 5-13; Springfield Boulevard Station, Figures 5-16, 5-17.

Proper selection of materials, finishes, and general aesthetic considerations should stimulate the passenger's pride for the facility and thereby reduce vandalism. Materials for these stations will be incombustible and resistant to weather, acid and alkali, wear, and impact. In selecting materials, consideration will be given to density, porosity, and ease in replacement. Non-slip finishes will be used on floors to help prevent possible injury to patrons. A schedule of room materials and finishes is shown in Figure 5-19. This schedule lists the rooms that will be located at each station and the materials and finishes that will be used in each particular room.

The proposed station at 108th-109th Avenues will be designed primarily for pedestrians. An entrance will be provided on the north side of the station and will primarily serve Jamaica Housing Developments One and Two.



met will serve pedestrians from the southeast and southwest quadrants as some passengers arriving by other modes. Refer to Figures 5-1, and 5-3 for reference to the 108th-109th Avenue Station.

The proposed Linden Boulevard Station is bounded by Linden Boulevard,

New York Boulevard, and the LIRR; however, the proposed side platforms

Extend westerly over Linden Boulevard for approximately 200 feet. The

Entrance to the station is located along Linden Boulevard just north of the

Existing LIRR overpass and adjacent to the proposed civic center. Bus

loading lanes will be provided on both sides of Linden Boulevard to handle

the estimated 2400 patrons arriving by bus. Reference should be made to

Figures 5-4, 5-5, 5-8, and 5-9 which show the plan and site views as well

as a perspective of the proposed station at Linden Boulevard.

The proposed Baisley Boulevard Station is bounded by Baisley Boulevard, Bedell Street, and the LIRR; however, the side-loading platforms extend westerly over Baisley Boulevard for approximately 135 feet. The entrance will front Baisley Boulevard and Bedell Street to conveniently serve the people living in Rochdale Village. A small portion of the existing Rochdale Village parking lot will be taken to provide space for the entranceway to the station. Bus loading lanes will be provided on both sides of Baisley Boulevard to handle the estimated 1200 patrons arriving by bus. Refer to Figures 5-11, 5-12, and 5-13 for reference to the Baisley Boulevard Station.

The proposed terminal station at Springfield Boulevard is bounded by Springfield Boulevard, 140th Avenue, and the LIRR; however, the proposed island platform extends easterly for approximately 210 feet over Springfield Boulevard. The proposed station entrance is located on the north side of the transit line and west of Springfield Boulevard. The entire block bounded by 140th Avenue, Springfield Boulevard and the Atlantic Branch of



The Line has the potential for development into a bus plaza and parking to serve the transit facility. Currently almost 75 percent of the area is vacant, undeveloped land which makes it highly suitable for the projected patronage to develop, the facilities to handle these patrons by their various access modes should be provided. Two dedicated, but unimproved streets ("paper streets"), 141st then and Coombs Street, intersect at the railroad right-of-way immediately atjacent to the proposed station. The paving of these two streets will provide convenient driver access to the station and permit traffic circulation through the site. See Figure 5-30.

The station structure will be similar to the other three stations although considerably larger in area. Additional rooms will be provided at this station for necessary operations of the terminal station. In order to avoid conflict with the primary function of the passenger station, these additional rooms will be grouped at the western end of the station at street level and will have a separate entrance.

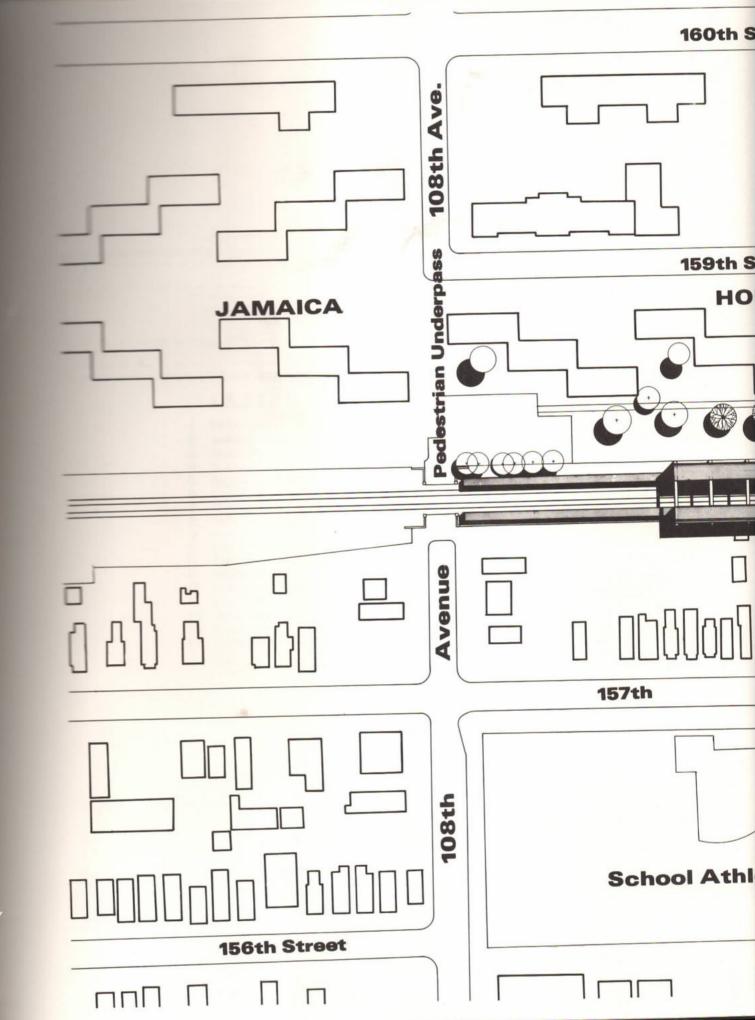
There will be a large bus loading area just west of the station entrance to accommodate the 1800 peak hour patrons arriving by suburban buses. A kiss-and-ride waiting and drop-off area is proposed directly in front of the station in order to keep the loading and unloading activitity off the city street. Canopies are proposed to protect patrons walking from the bus and kiss-and-ride areas to the station. The generous open space allows for an organized flow of traffic out of the station site. During inclement weather, these patrons may use the large, enclosed lobby as a place to wait for their ride.

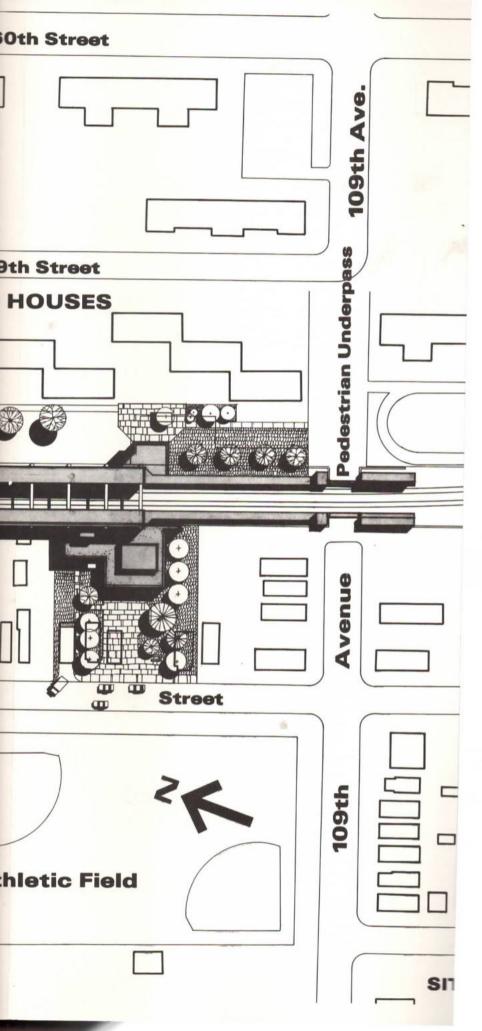
A bus plaza and parking facility is proposed for the area bounded by 140th Avenue, Springfield Boulevard, and the LIRR. As stated before in Section 3, a large portion of this area is vacant which makes it ideal for

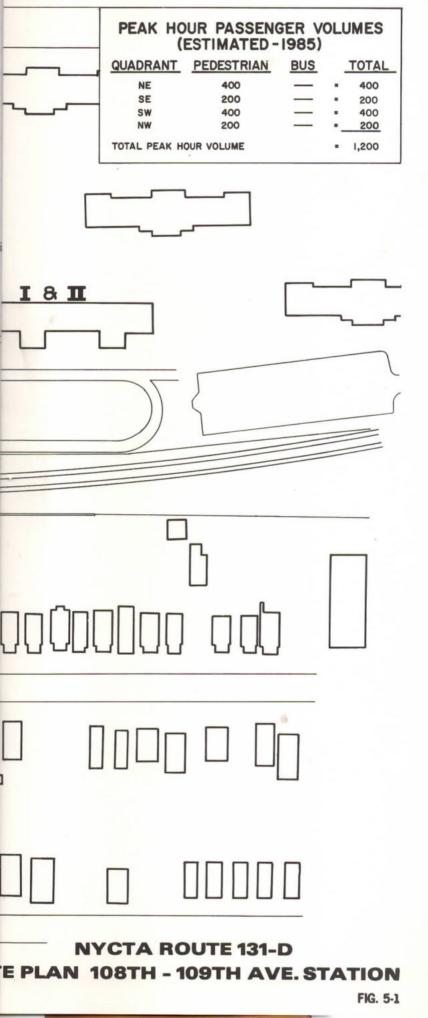


Deprojected increase in patronage, property for a proposed parking garage mould be made available. (See Figure 5-14). It is therefore recommended met every effort be made to encourage appropriate agencies to acquire this excitional property to provide for the development of off-street parking at the site. Refer to Figures 5-14, 5-16, 5-17, and 5-18 for the station and site views as well as a perspective of the proposed station enterior.











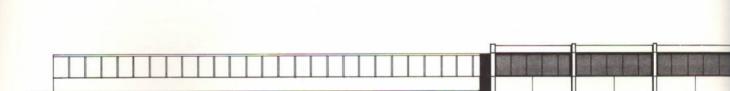


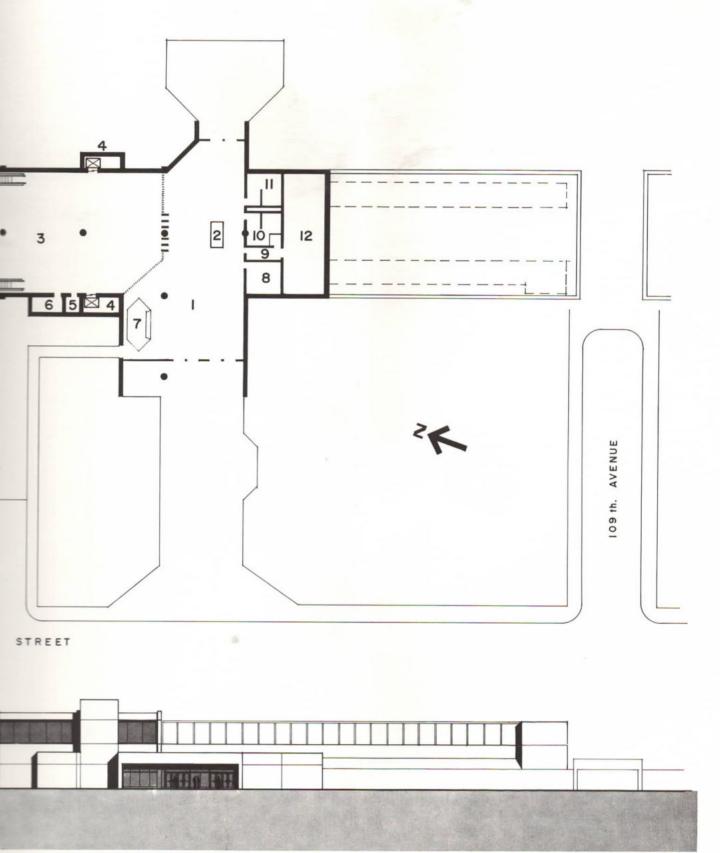
- FREE AREA
- TOKEN BOOTH
- 3 PAID AREA
- ELEVATORS FOR HANDICAPPED
- PUBLIC ADDRESS
- 56 EMERGENCY ROOM
- 7 CONCESSION
- 8 ASSISTANT SUPERVISOR'S OFFICE
- 9 PORTER
- EMPLOYEE'S LOCKER & TOILET (FEMALE) EMPLOYEE'S LOCKER & TOILET (MALE)
- 12 MECHANICAL
- 13 ELEVATOR MAINTENANCE
- 14 ELECTRICAL ROOM
- 15 MECHANICAL
- 16 STORAGE
- 17 TURNSTILE MAINTENANCE

ENTRY LEVEL PLAN

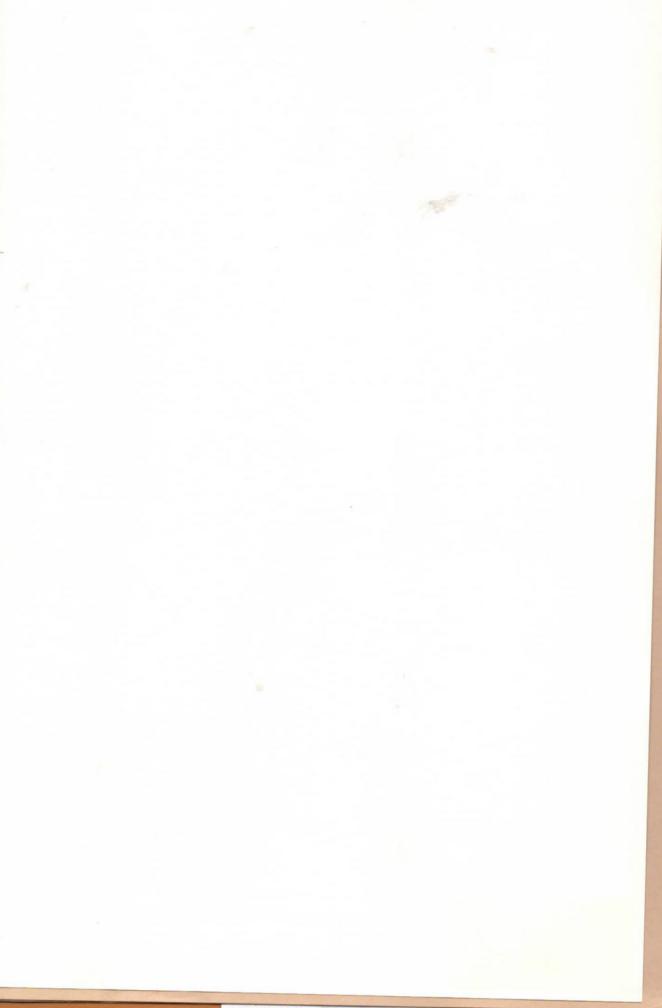


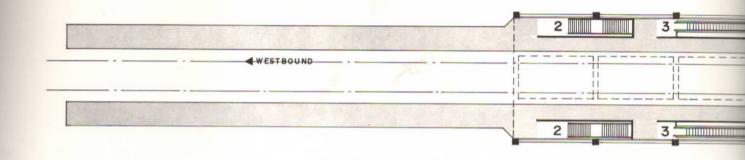
157 th.





NYCTA ROUTE 131-D 108TH - 109TH AVE. STATION STREET LEVEL





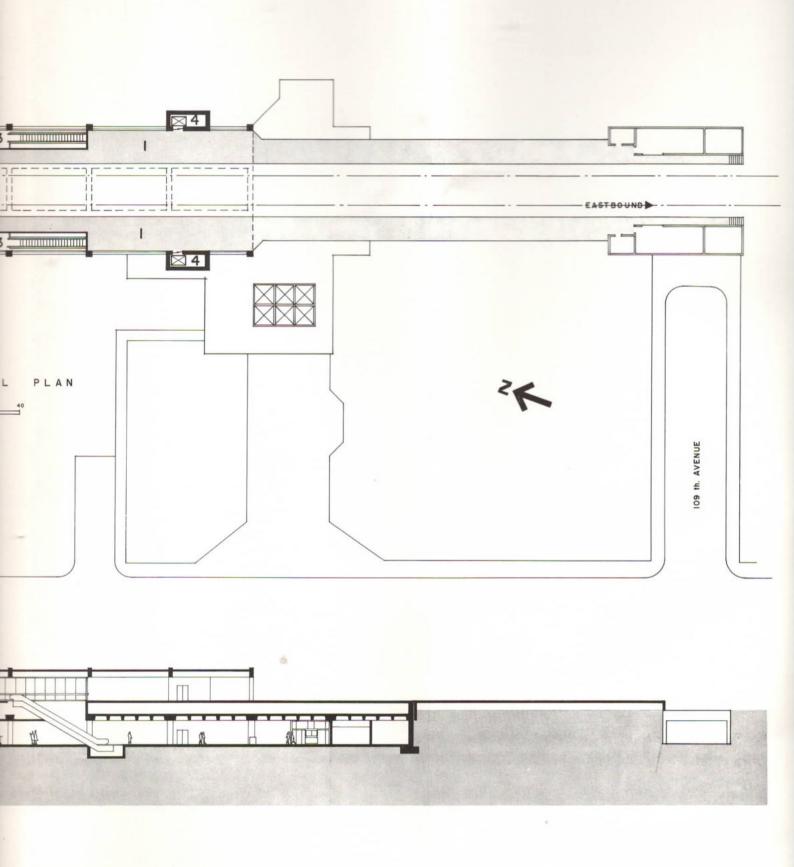
I PLATFORM

2 STAIR
3 ESCALATOR
4 ELEVATORS FOR HANDICAPPED
5 TELEPHONE ROOM
6 REFUSE STORAGE
7 BATTERY CHARGING & SCRUBBING

PLATFORM LEVEL PLAN

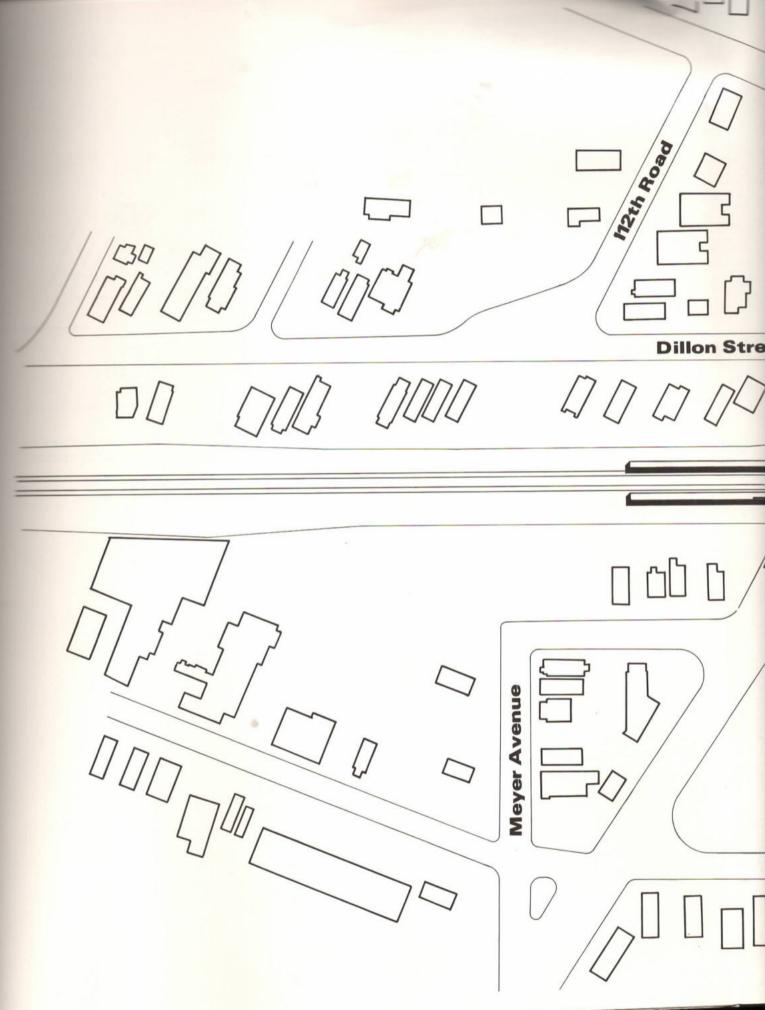


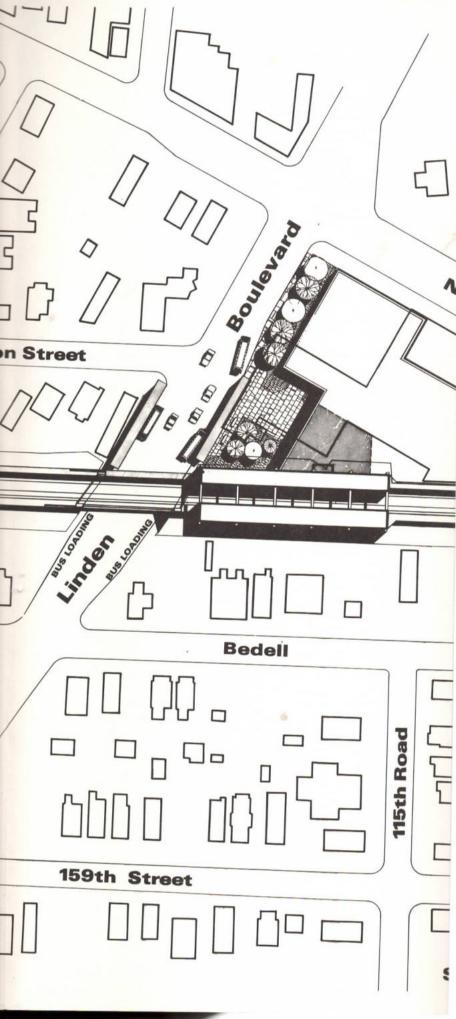


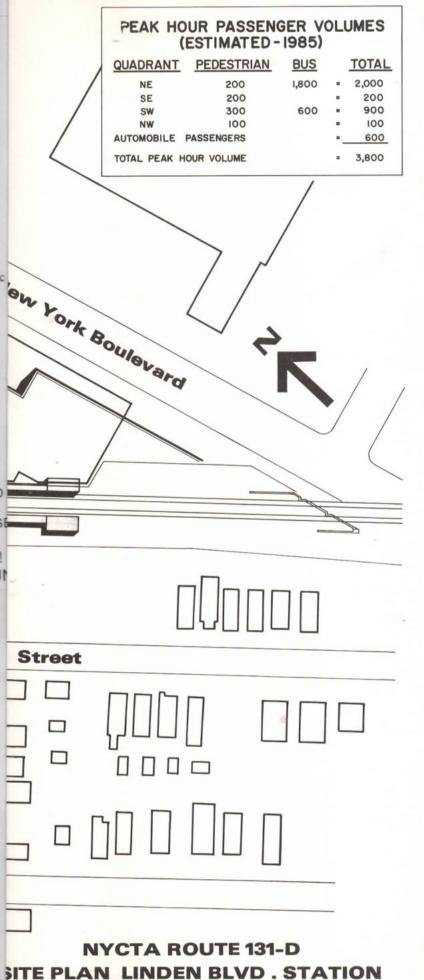


NYCTA ROUTE 131-D 108TH - 109TH AVE. STATION PLATFORM LEVEL

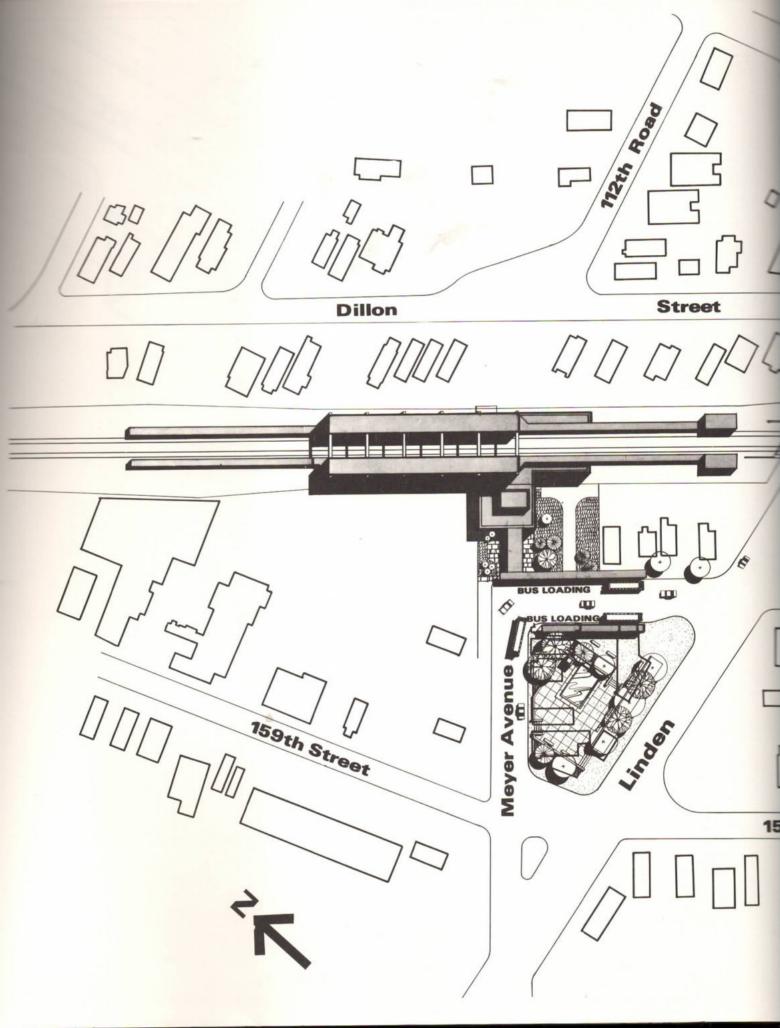


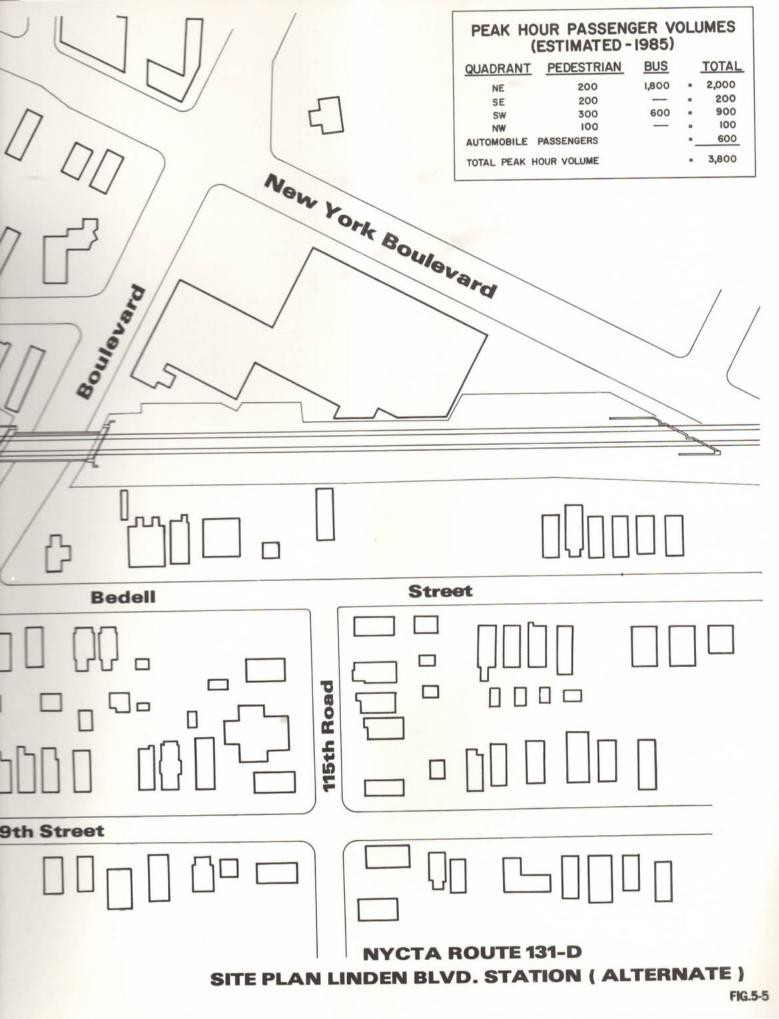


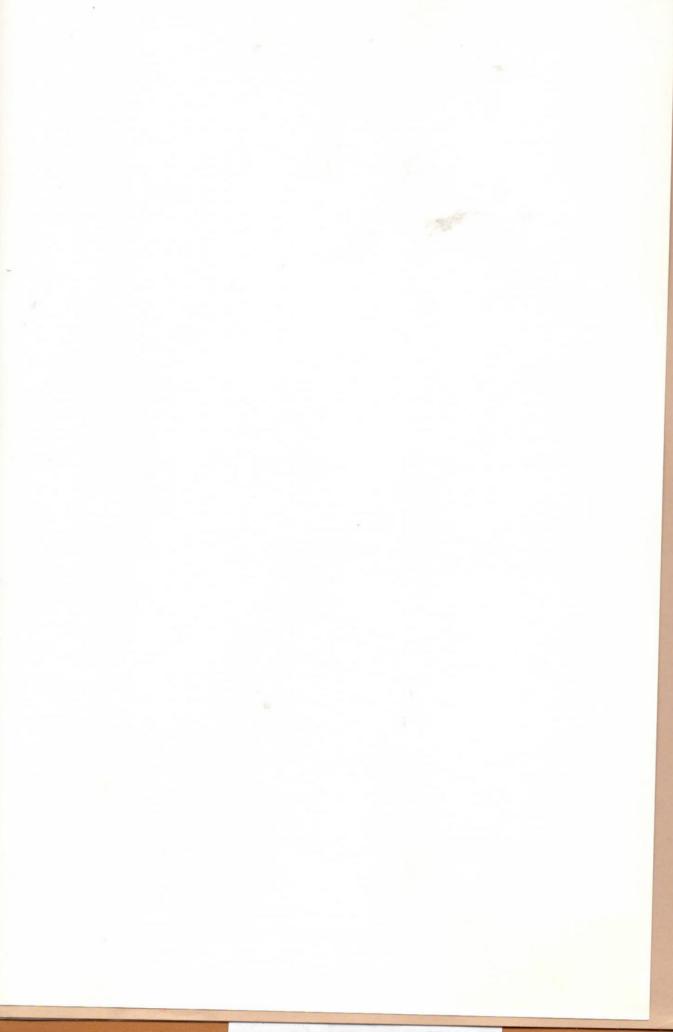


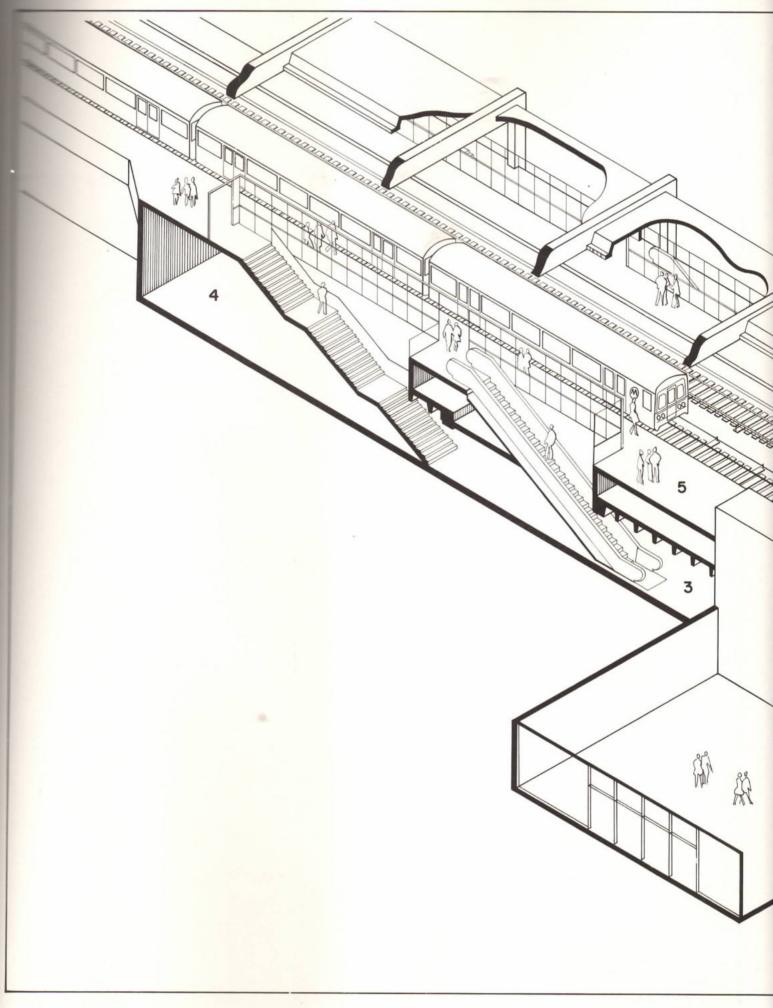


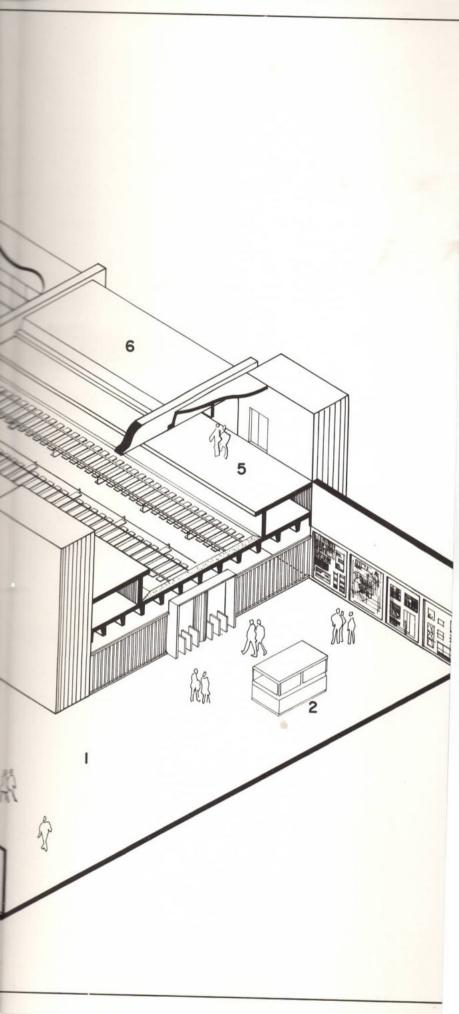












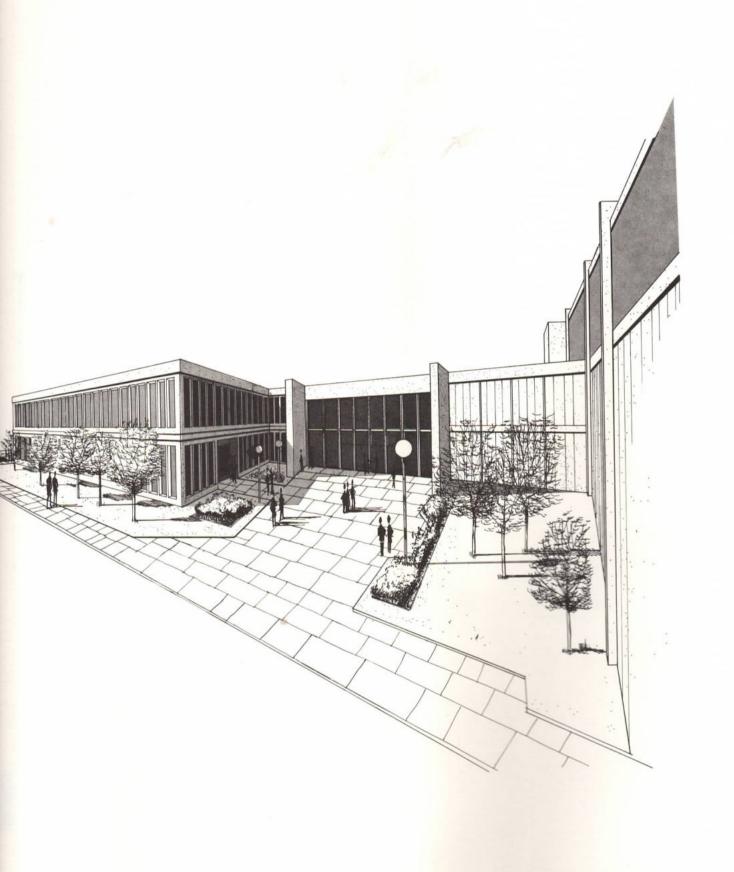
I FREE AREA

tic

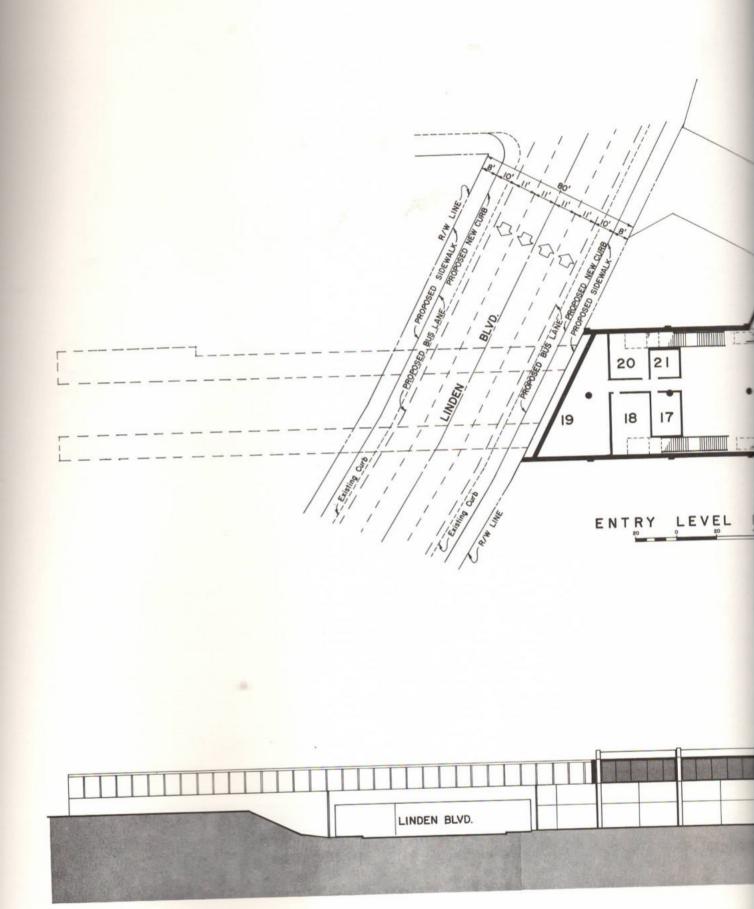
- 2 TOKEN BOOTH
- 3 PAID AREA
- 4 MECHANICAL
- 5 PLATFORM LEVEL
- 6 CANOPY

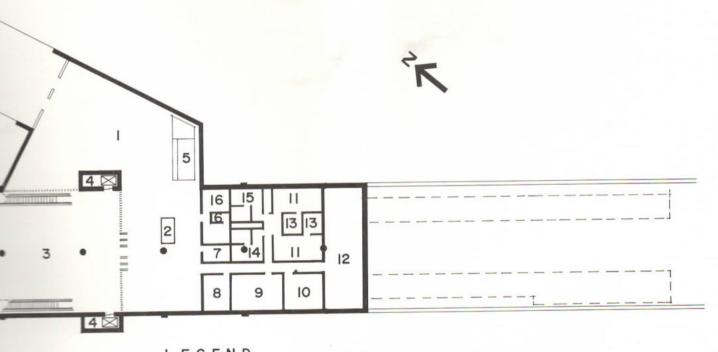
NYCTA ROUTE 131-D
TYPICAL SIDE PLATFORM
STATION CUT AWAY









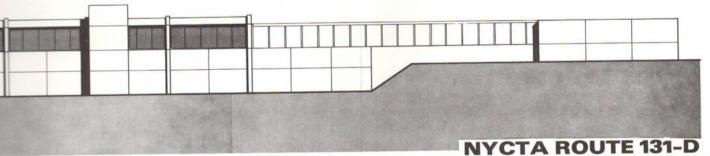


FREE AREA

PLAN

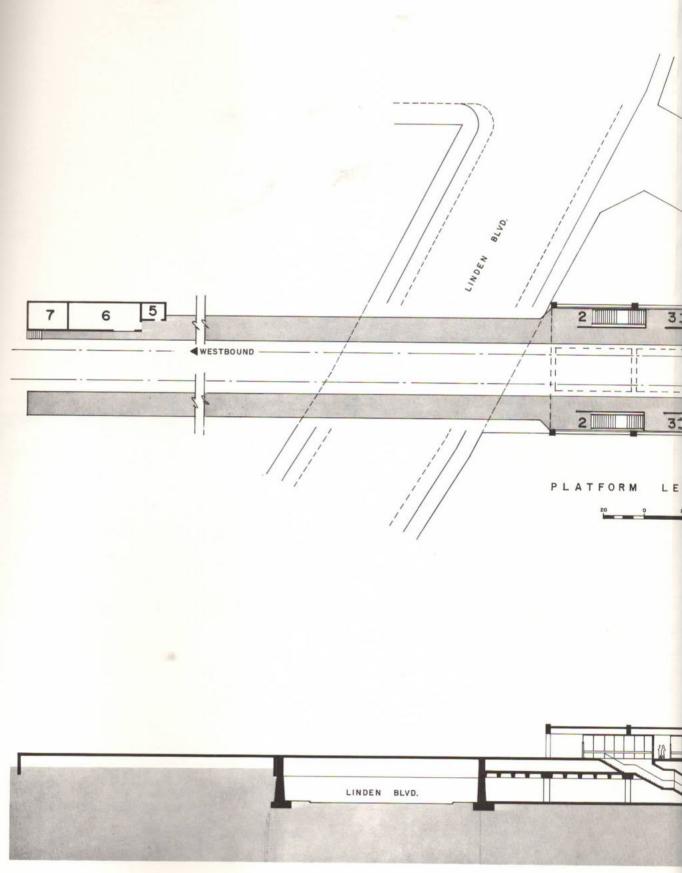
- 23 TOKEN BOOTH
- PAID AREA
- ELEVATORS FOR HANDICAPPED
- 5 CONCESSION
- PUBLIC ADDRESS
- EMERGENCY ROOM
- ASSISTANT SUPERVISOR'S OFFICE 8
- 9 TRACK FIELD OFFICE
- 10 EQUIPMENT
- MAINTENANCE QUARTERS 11

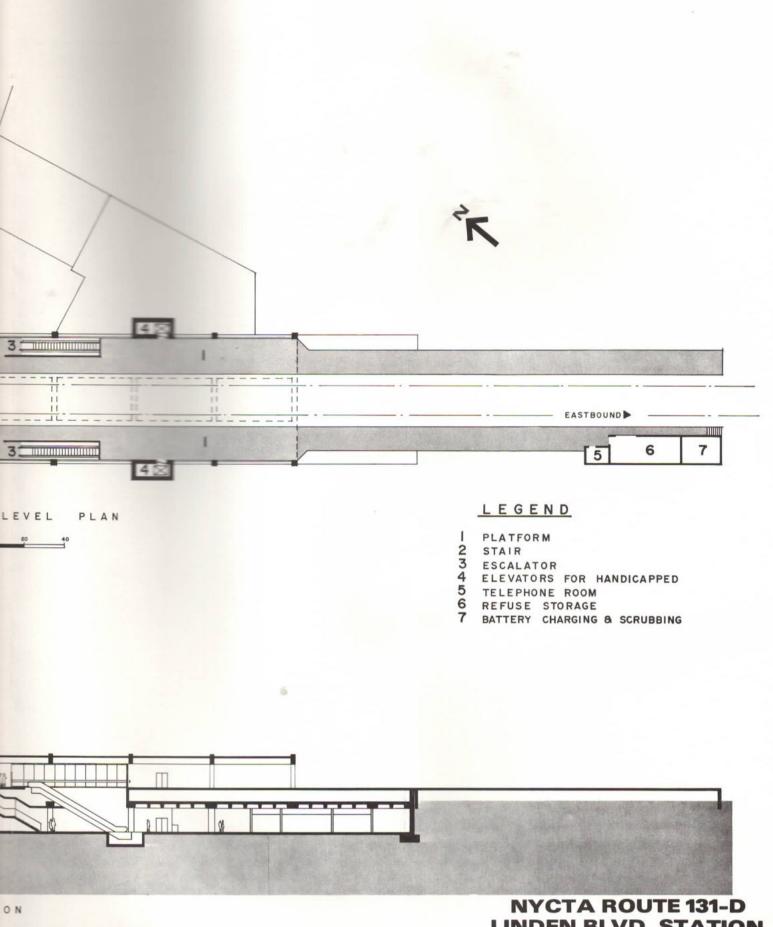
- 12 MECHANICAL
- 13 TOOL
- EMPLOYEE'S LOCKER & TOILET (FEMALE) 14
- 15 EMPLOYEE'S LOCKER & TOILET (MALE)
- 16 PORTER
- 17 ELEVATOR MAINTENANCE
- 18 ELECTRICAL
- 19 MECHANICAL
- 20 STORAGE
- 21 TURNSTILE MAINTENANCE



NYCTA ROUTE 131-D LINDEN BLVD. STATION STREET LEVEL

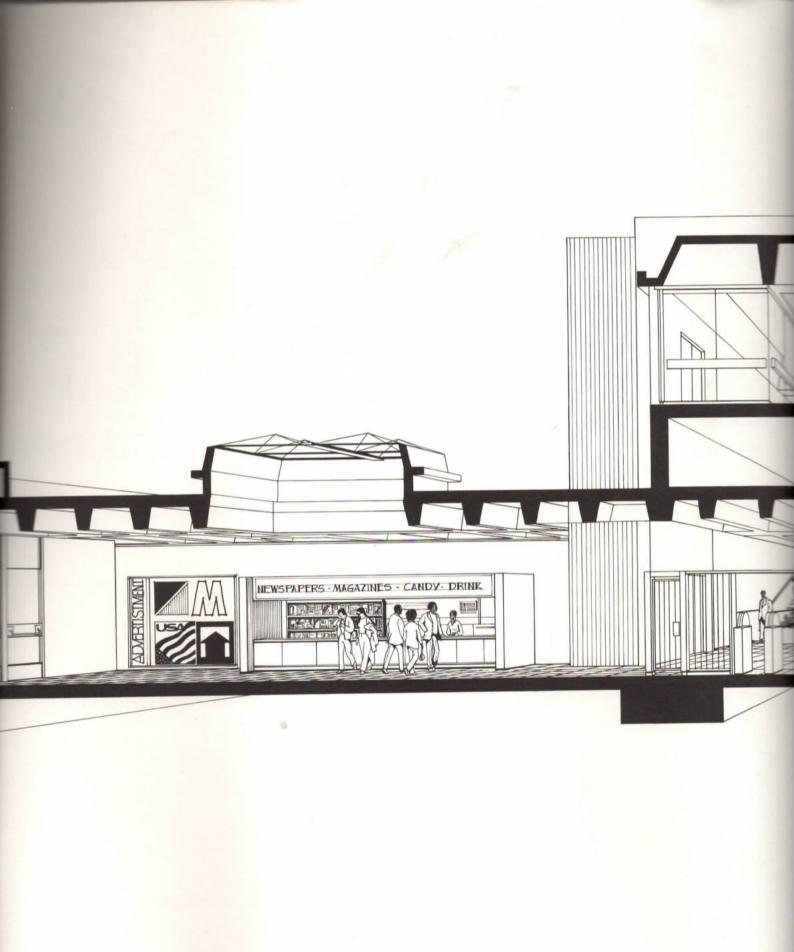


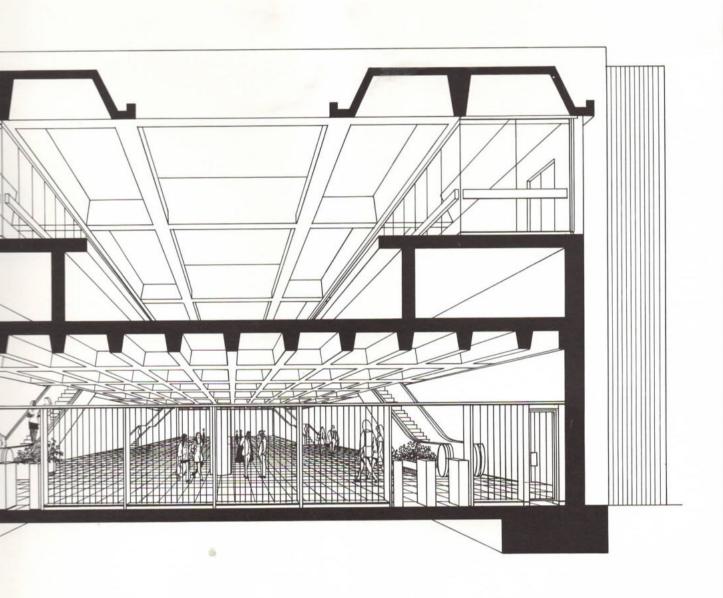




LINDEN BLVD. STATION PLATFORM LEVEL

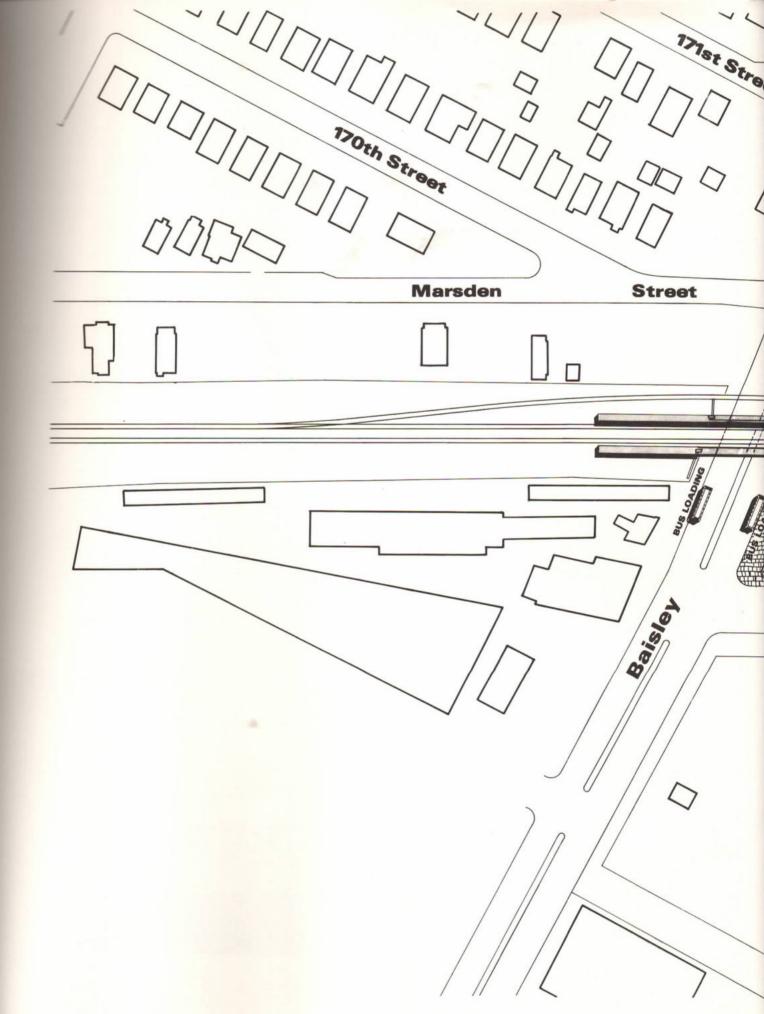


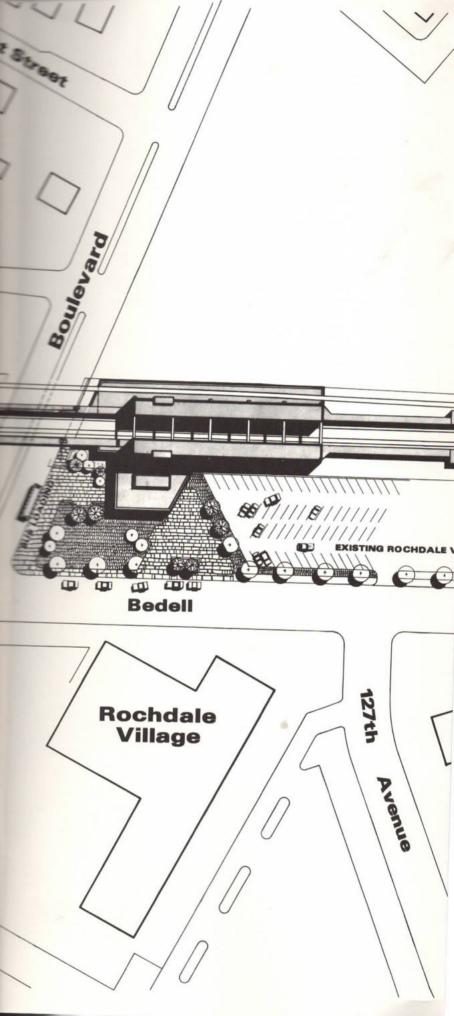




NYCTA ROUTE 131-D TYPICAL STATION INTERIOR PERSPECTIVE







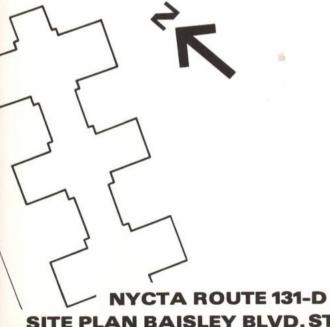
PEAK HOUR PASSENGER VOLUMES (ESTIMATED - 1985)

QUADRANT	PEDESTRIAN	BUS		TOTAL
NE	200	900		1,100
SE	400	_		400
sw	400	300		700
NW	200	_		200
AUTOMOBILE	PASSENGERS		٠.	350
TOTAL PEAK H	OUR VOLUME		•	2,750



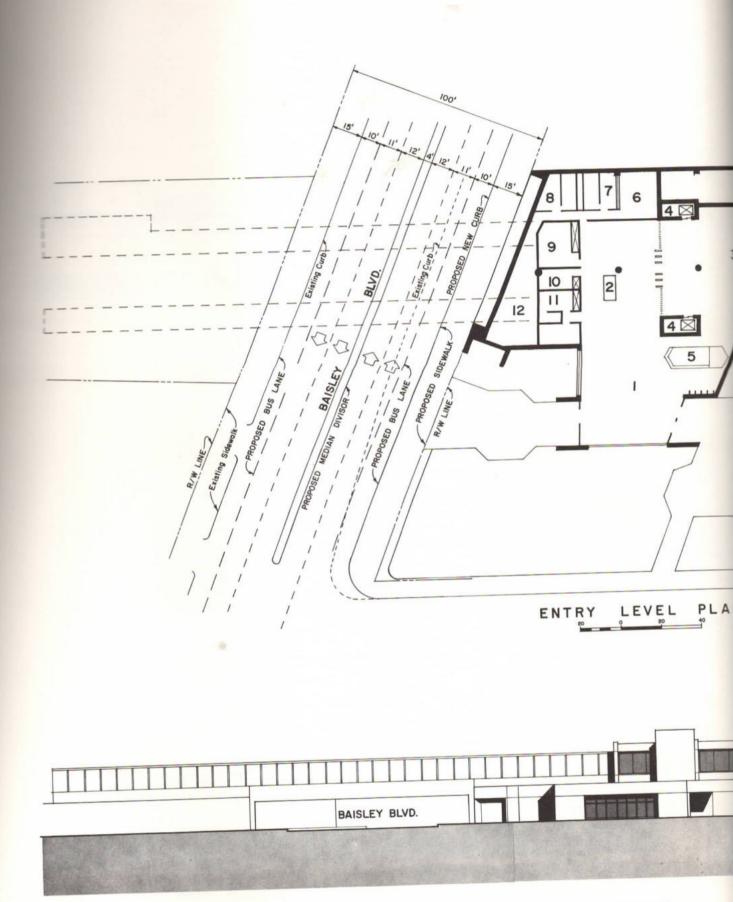


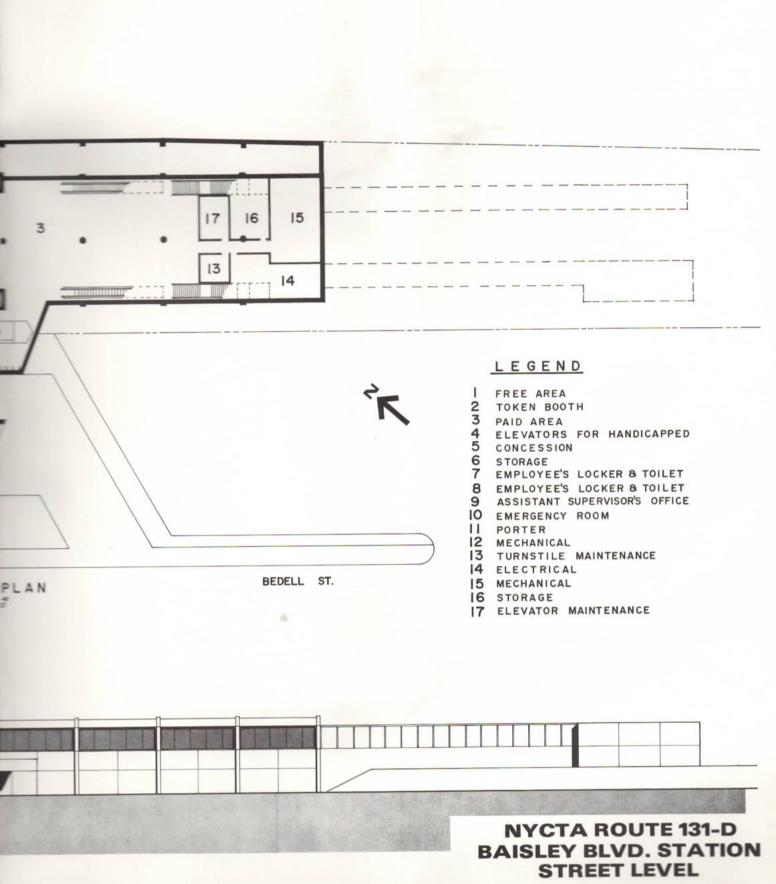
Street



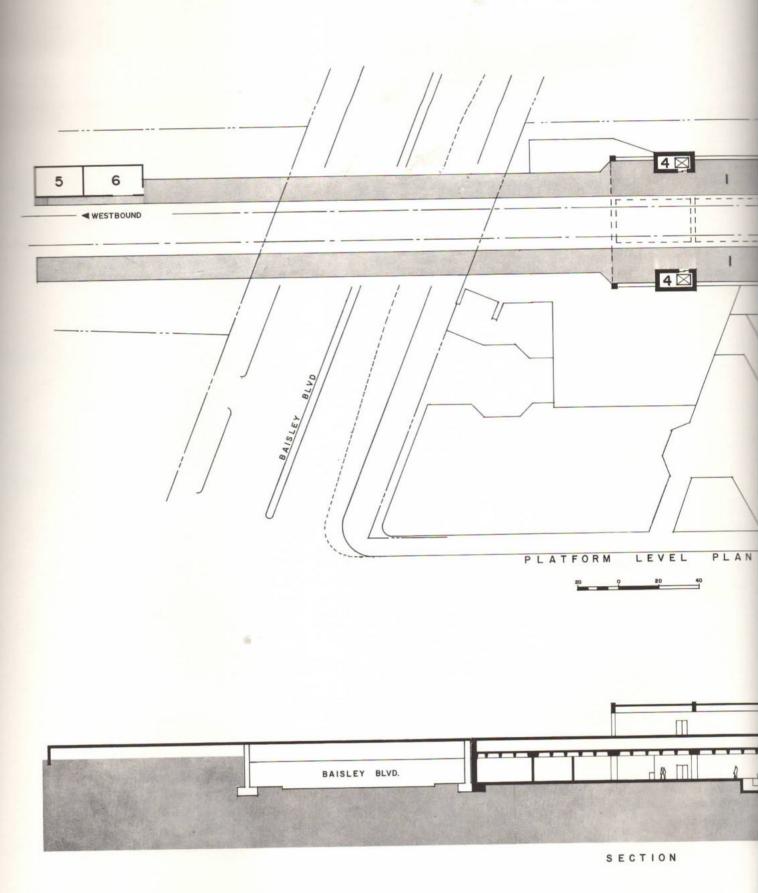
SITE PLAN BAISLEY BLVD. STATION

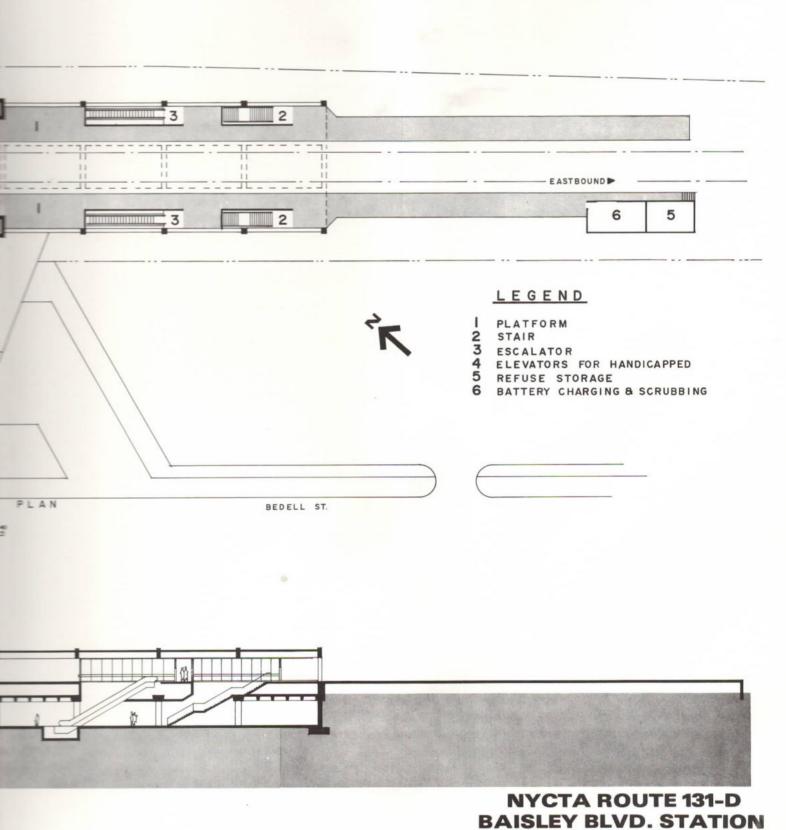






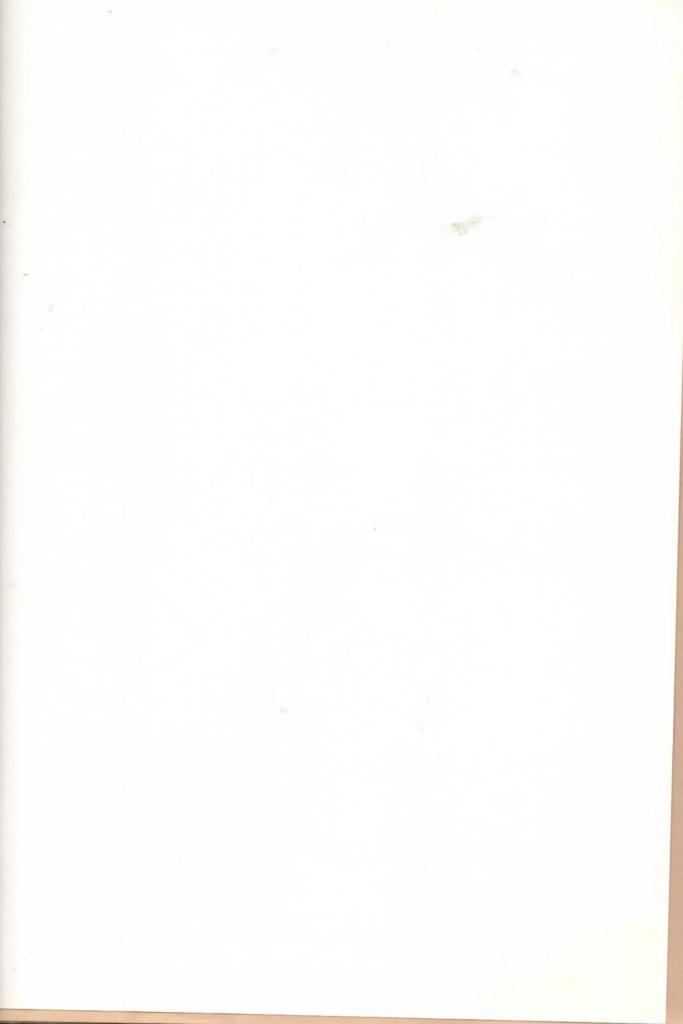


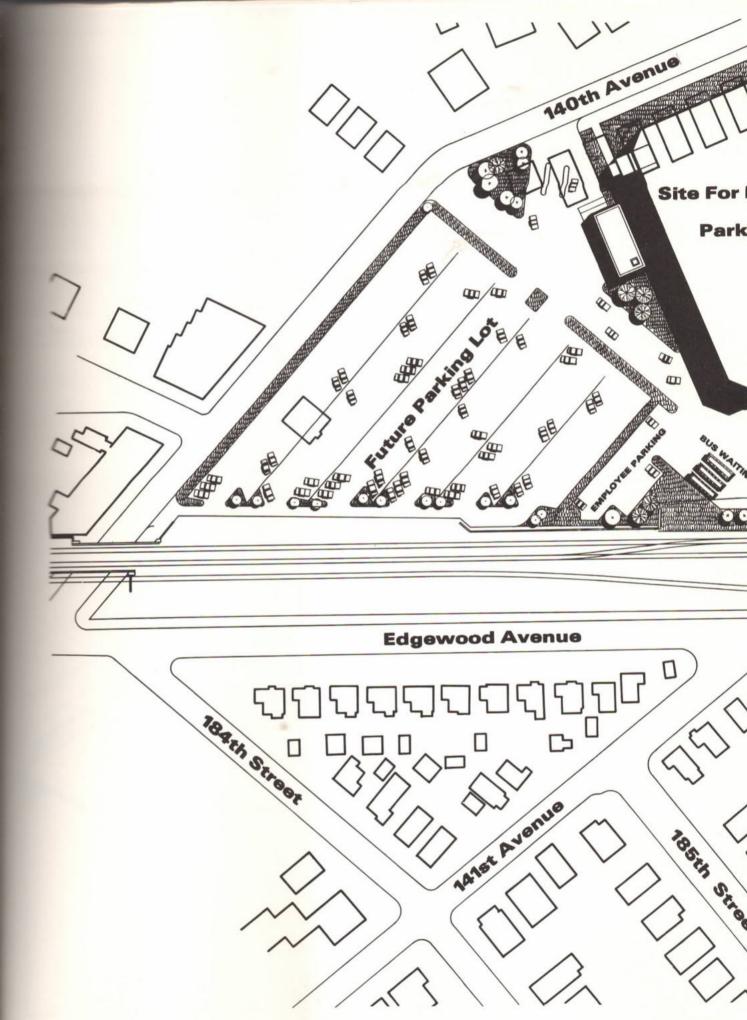


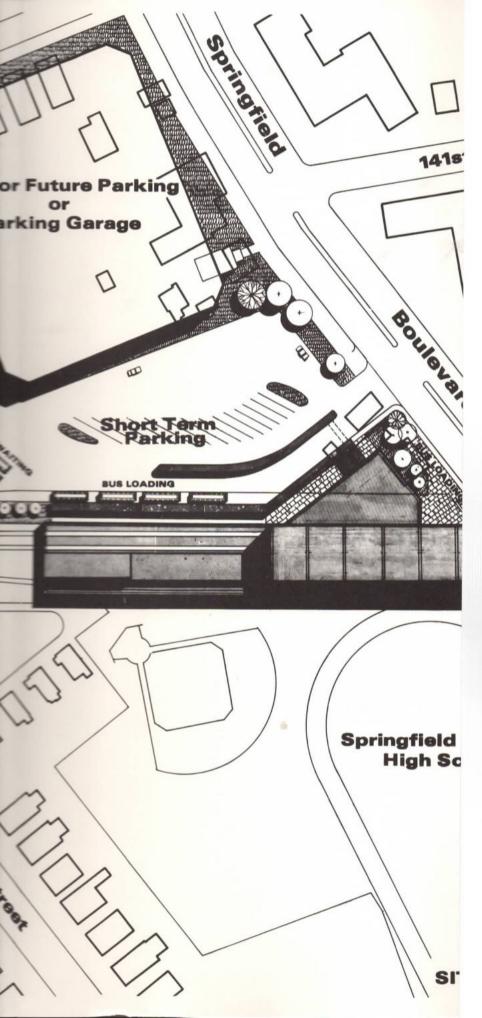


PLATFORM LEVEL

FIG. 5-13







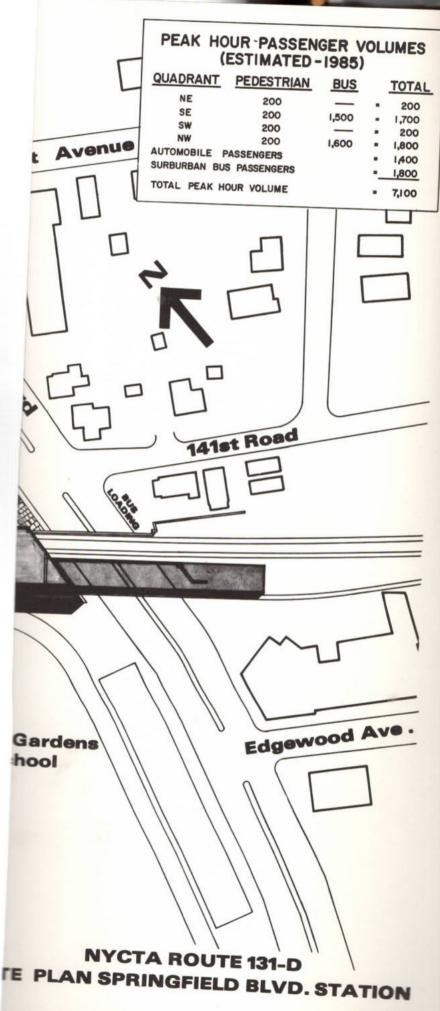
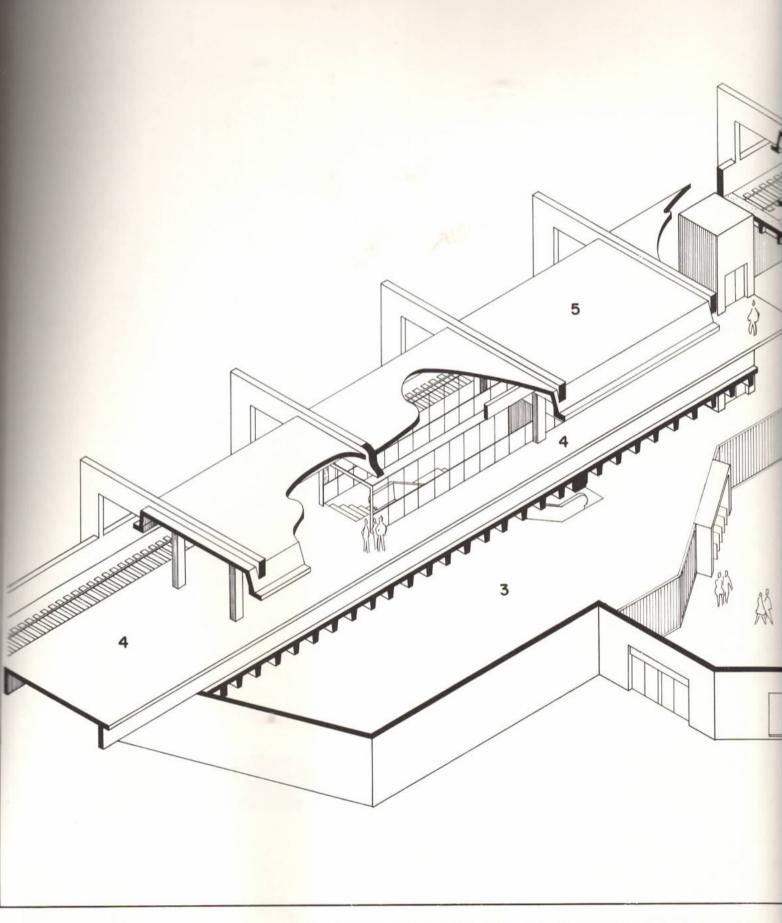
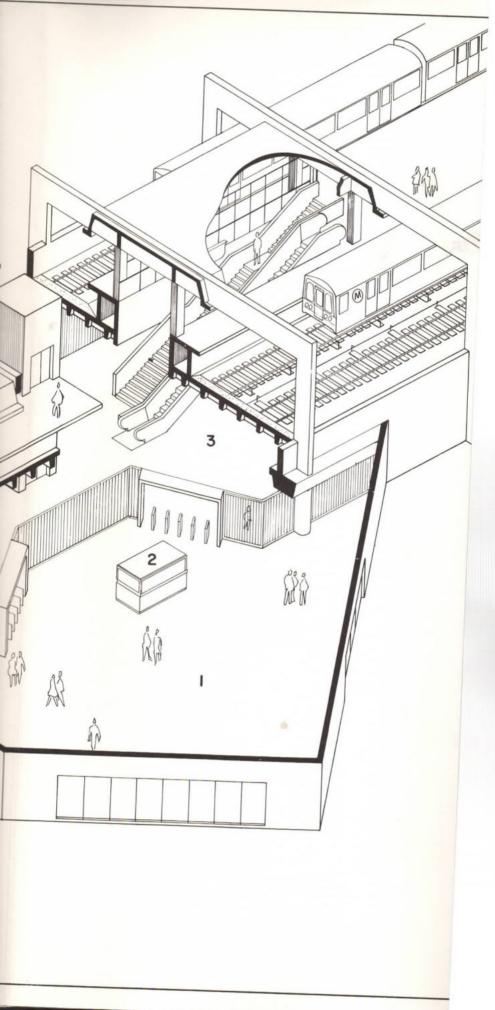


FIG. 5-14







4 antic

D

LEGEND

FREE AREA 2345 TOKEN BOOTH

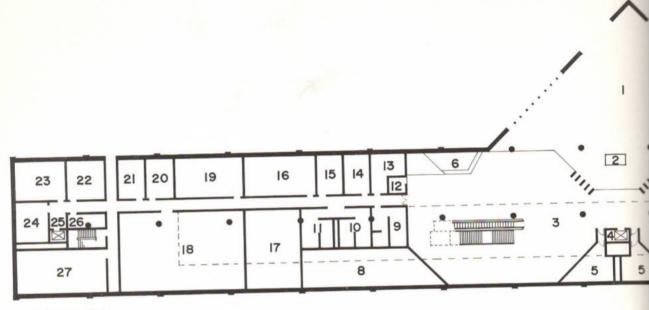
PAID AREA PLATFORM LEVEL

CANOPY

NYCTA ROUTE 131-D TYPICAL CENTER PLATFORM STATION CUT - AWAY

FIG. 5-15





LEGEND

FREE AREA

TOKEN BOOTH

2 PAID AREA

ELEVATORS FOR HANDICAPPED

PUBLIC TOILETS

CONCESSION

MECHANICAL ROOM

8 ELECTRICAL ROOM 9 PORTER

IO EMPLOYEE'S LOCKER & TOILET (FEMALE)

II EMPLOYEE'S LOCKER & TOILET (MALE)

12 EMERGENCY ROOM

13 STATION SUPERVISOR'S OFFICE

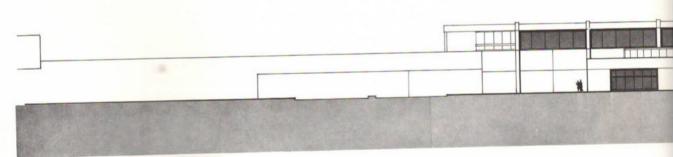
14 ASSISTANT SUPERVISOR'S OFFICE

15 ESCALATOR EQUIPMENT

16 ELEVATOR - ESCALTOR SUB-DIVISION

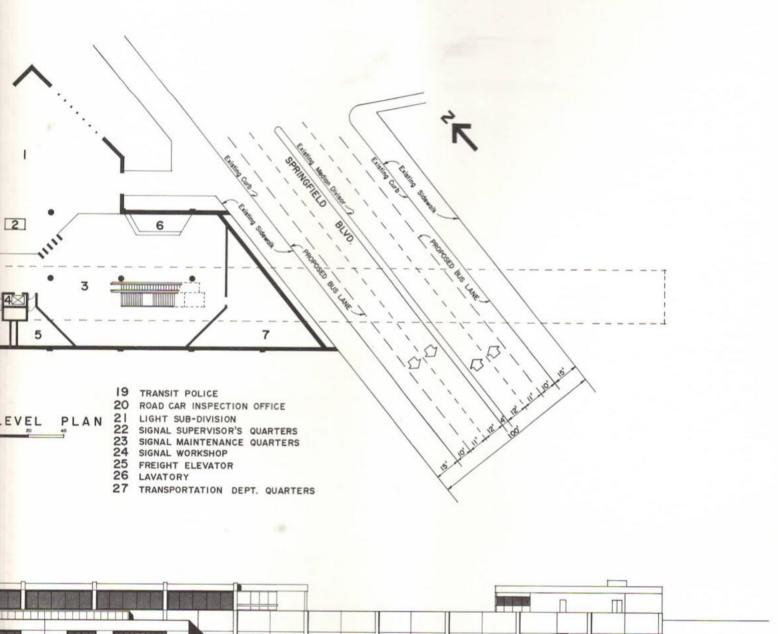
17 MECHANICAL

18 OPERATIONS & MAINTENANCE CREW ROOM (125 LOCKERS)



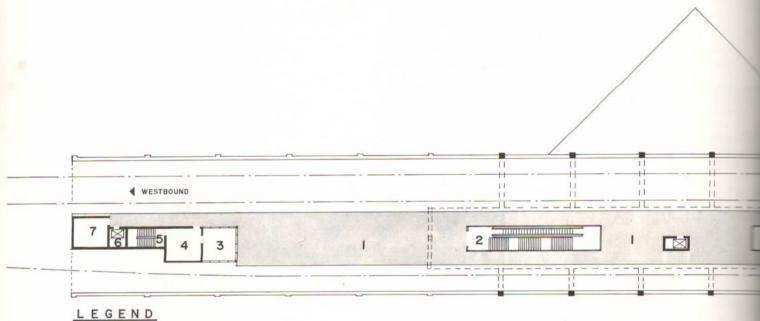
LEVEL

ENTRY



VATION



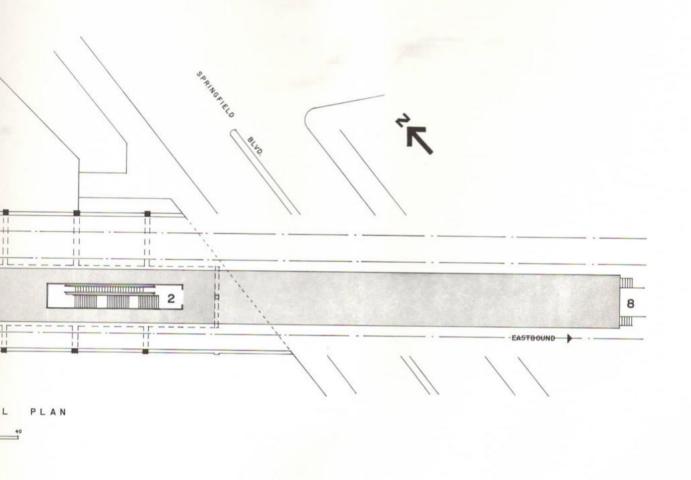


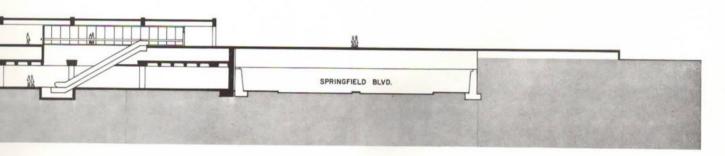
- PLATFORM
- PLATFORM
 STAIR-ESCALATOR
 DISPATCHERS OFFICE
 WAITING ROOM
 STAIR
 FREIGHT ELEVATOR
 REFUSE STORAGE
 RELAY ROOM



LEVEL

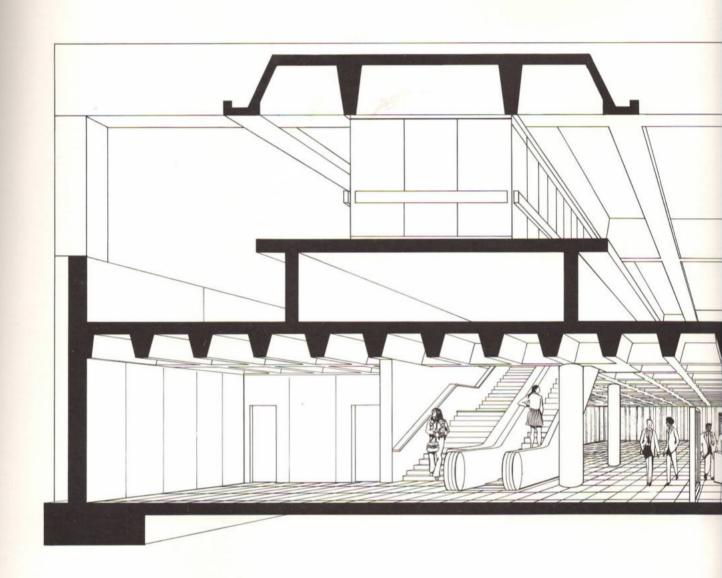
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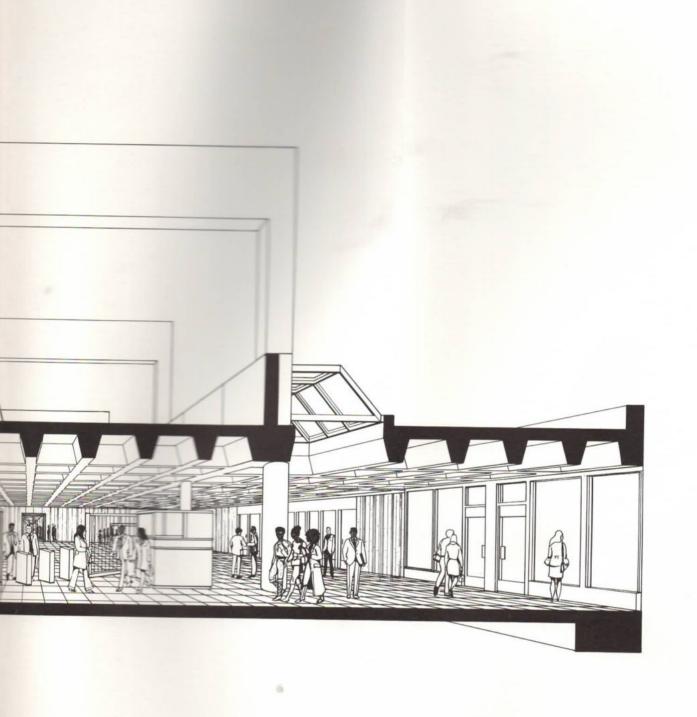




NYCTA ROUTE 131-D SPRINGFIELD BLVD. STATION PLATFORM LEVEL







NYCTA ROUTE 131-D SPRINGFIELD BLVD. STATION INTERIOR PERSPECTIVE



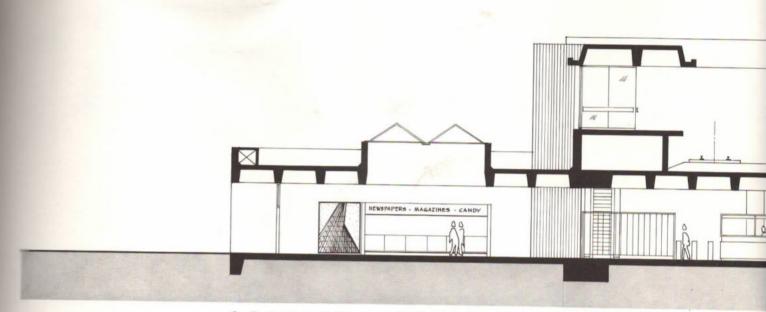
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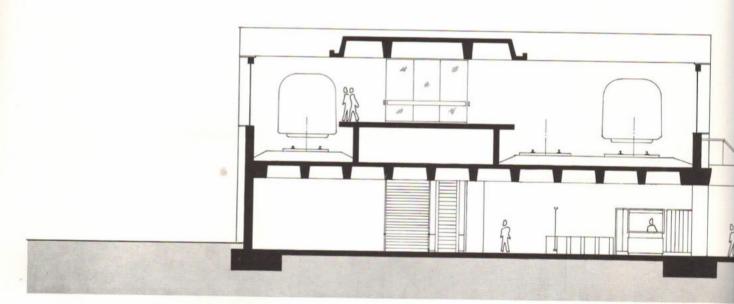
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NYCTA ROUTE 131-D FINISH & ROOM SCHEDULE

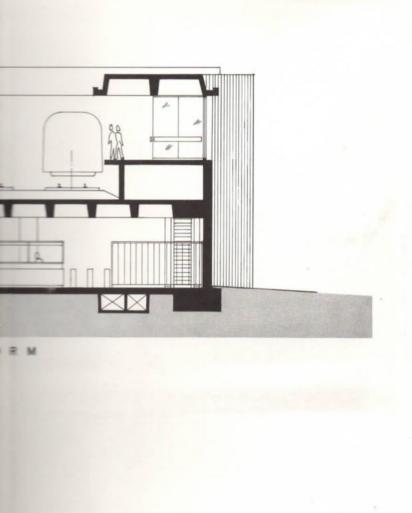


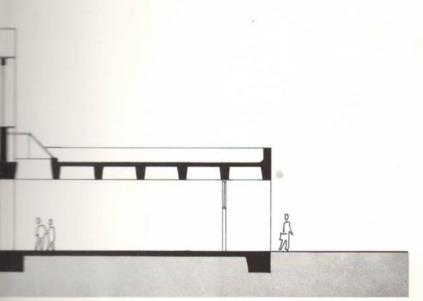


SECTION - TYPICAL SIDE PLATFORM

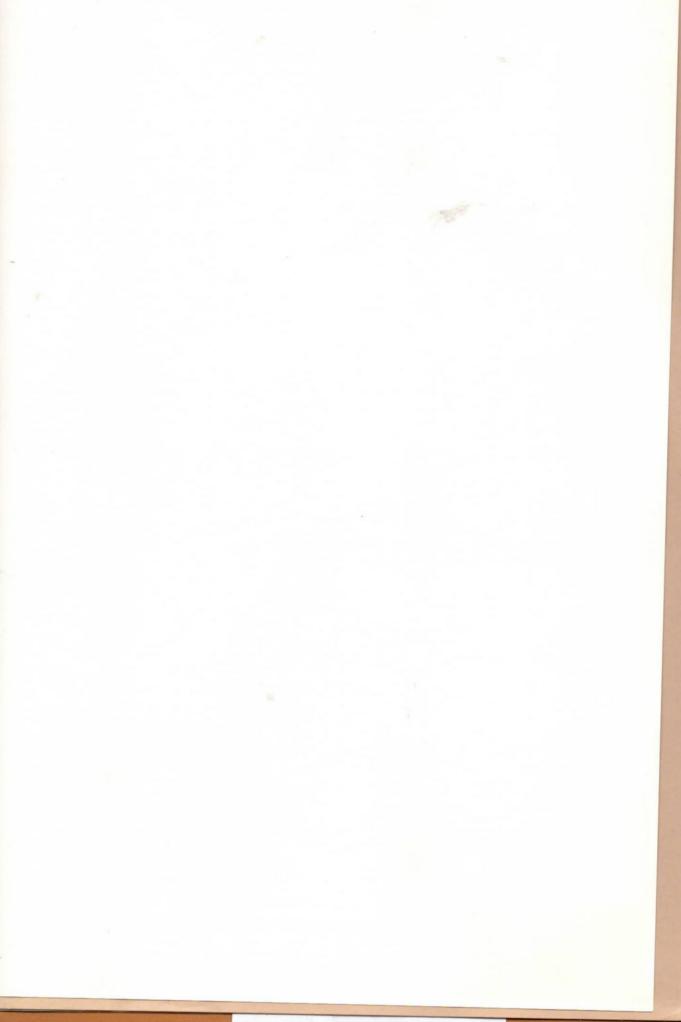


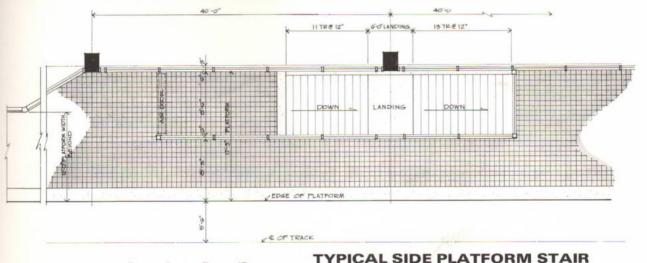
SECTION - TYPICAL ISLAND PLATFORM



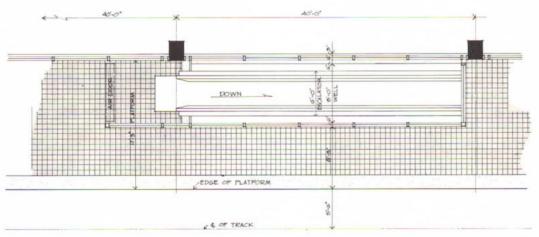


NYCTA ROUTE 131-D TYPICAL STATION SECTIONS

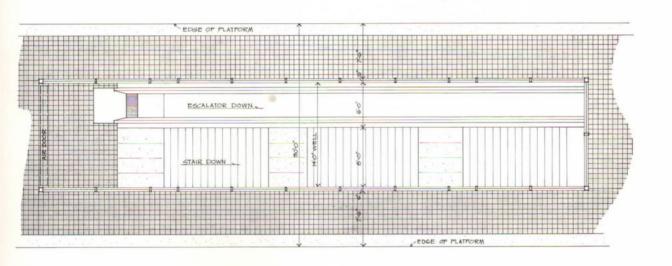




TYPICAL SIDE PLATFORM STAIR AT PLATFORM LEVEL



TYPICAL SIDE PLATFORM ESCALATOR AT PLATFORM LEVEL



A OF TRACK TYPICAL ISLAND PLATFORM STAIR/ESCALATOR

> **NYCTA ROUTE 131-D** PLATFORM WIDTHS AT **STAIRS & ESCALATORS**



STRUCTURES

The relocation and addition of track on both the Atlantic and Montauk Branches requires the widening and/or modification of seven of 13 existing bridges on the Atlantic Branch and 12 of 21 existing bridges located on the Montauk Branch (including the Mainline portion involved). These required widenings consist of new separate parallel spans or of direct attachments to the existing bridge. These widenings also necessitate the extension or reconstruction of the existing bridge substructures. A few bridges will require complete removal and reconstruction utilizing staged construction or temporary run-arounds to maintain traffic if required.

Six of the existing thirteen LIRR bridges located along the Atlantic Branch will be used in their entirety without modification for the proposed Route 131-D. These bridges, located at 108th Avenue, 109th Avenue, Brinkerhoff Avenue, 111th Avenue, New York Boulevard and Foch Boulevard, were all designed in 1953 as a part of the elimination of grade crossings project between Jamaica and Rosedale Stations. The design loading for each structure was Cooper's E-72 as specified by the A.R.E.A. Manual.

The NYCTA has specified that Route 131-D should be designed for transit car live loads. A comparison between the Cooper E-72 (AREA) bridge live loading criteria and the NYCTA bridge loading criteria shows that the NYCTA criteria results in a live loading that is 2/3 the magnitude of the LIRR loading.

A combination of dead and live load criteria, when compared, shows that the NYCTA criteria exerts 76 percent of the total load applied under LIRR criteria.

These relationships show that the existing LIRR bridges that are to be used for Route 131-D without modification are more than adequate; i.e., these bridges are capable of carrying 25 percent more load than that to which they will be subjected.



The remaining seven bridges on the Atlantic Branch are to be widened reconstructed as a result of the proposed track alignment. The existing bridges at Linden Boulevard, Baisley Boulevard, 224th Street, and 225th Street must be removed and reconstructed; the existing bridges at Farmers Boulevard, 140th Avenue, and Springfield Boulevard must be widened.

The existing Montauk Branch bridges were constructed at various times over the past 50 years. The Mainline bridges, 150th Street and New York Boulevard, were designed in 1913 using P.R.R. loading, which is equivalent to the A.R.E.A. Cooper E-60 loading. The Jamaica Viaduct-Liberty Avenue Viaduct was designed in 1928 for Cooper's E-60 live loading. The remainder of the bridges on the Montauk Branch, except the 225th Street and North Conduit structures, were designed in 1934 for Cooper's E-60 live loading. The 225th Street and North Conduit structures were designed in 1946 for Cooper's E-72 live loading. The above E-60 loading is satisfactory to the LIRR. New structures and modifications are all designed for Cooper's E-72 live loading.

The abandonment of the old Southern Undercrossing to the Atlantic

Branch by the LIRR requires that a new superstructure at 150th Street

consisting of eleven deck plate girders be erected over 150th Street.

Sections of the existing abutments must be reconstructed to support the structure. Construction must follow a staged procedure in order to maintain LIRR traffic.

Two new deck plate girders placed between the existing New York

Boulevard structures must be added to support the relocated LIRR track

and new crossover. No other work will be required for any of the other

Mainline bridges.



The new third track for the Montauk Branch will parallel the existing Montauk Branch on the south side for the length of the Jamaica Viaduct. A new approach retaining wall for the third track must be constructed on the south side to maintain the necessary grade. Due to the limited space, the struts for this wall must be dowelled into the existing wall. The existing Mainline Track 2 will be removed as part of the operations scheme in this area. The proposed third track will cross the abutment extension and will be supported on a new parallel superstructure. This superstructure is to consist of a concrete deck supported by steel plate girders and steel cross girders on steel columns. In order to avoid interference with the underlying LIRR track and associated facilities, outrigger column-cross girder arrangements will be required at various locations. The new portion of viaduct will have duct banks and related provisions necessary to accommodate relocation of existing high tension pole line. Ducts for third rail cables and feeders from new breakers in the Hillside substation will also be provided. Impedence bonds will be placed beside the LIRR track structure. The architecture of the new parallel structure blends well with the existing deck plate girder structure supported on columns.

The track re-alignment made possible by the removal of the existing St. Albans LIRR Station rules out the advisability of using the existing Linden Boulevard Bridge. A staged construction procedure will be utilized to maintain traffic while removing the existing three-span, thru-girder structure and constructing a new, single span, thru-girder structure for the three Montauk tracks. The existing columns in Linden Boulevard will be removed.

The bridges at Baisley Boulevard, Farmers Boulevard, Merrick Boulevard, and 219th Street on the Montauk Branch will all employ new separate parallel



spans for the new track. The 120th Avenue Bridge will be widened for the new track by directly connecting to the existing bridge. Track realignment dictates the reconstruction of the 141st and 225th Street bridges.

New bridge construction and renovation make up a major portion of the structural work required for construction. New retaining walls for the route also forms a large part of construction. All walls shown are of the semi-gravity type specified by AREA or by the NYCTA. Footing sizes and foundation types are based on bearing values estimated from previous core borings and on the performance of the existing foundations in the area. The supporting foundation material predominant throughout the project area is compact sand and gravel, which has a bearing capacity of 3-5 tons per square foot. Some loose sand deposits are present, requiring pile foundations for structure support. Additional core borings and soil investigation will be required for final design.

Other structures include the cut and cover tunnel on the Atlantic

Branch and the substation buildings. All structural work associated with
station construction is described in the previous section and the estimated
structural costs for stations are included under that heading.

The total estimated cost of bridges, substations, cut and cover tunnel, and miscellaneous structural work for the NYCTA Atlantic Branch is \$6.6 million. The Montauk Branch structure cost is \$14.9 million, resulting in a combined total cost of \$21.5 million. The NYCTA walls on the Atlantic Branch are estimated at \$8.1 million and those for the Montauk Branch cost \$7.1 million, resulting in a total of \$15.2 million. The total combined cost for structures and walls on both branches is \$36.7 million.



UTILITIES

The major underground utilities were located using reference materials provided by the Brooklyn Union Gas Company, the Consolidated Edison Company, the Jamaica Water Supply Company, the Queens Borough Storm & Sanitary Sewer Authorities, and the Western Union and New York Bell Telephone Company. Alternative 2 involves an above-ground design and therefore any interference with these major utilities by the project's construction would be found mainly at the intersection of the city roadways and the overpasses of the LIRR. The widening of certain bridges and the complete rebuilding of others will not interfere with existing utility service. Almost all utilities lie between the curb lines of each particular roadway and therefore will not be affected by additional support construction necessary at each bridge overpass.

Utility service will have to be provided for the proposed car wash and cleaning platform located between Baisley and Farmers Boulevards on the Atlantic Branch of the LIRR. Utility service will also be necessary at each of the four proposed stations along the Atlantic Branch, at 108th-109th Avenues, Linden Boulevard, Baisley Boulevard, and Springfield Boulevard.

Protective measures will be needed at one particular location along the Atlantic Branch between Baisley Boulevard and Farmers Boulevard near the existing power substation. Two sewers are located in this vicinity which run perpendicular to the existing LIRR tracks. These are a 60-inch sanitary sewer and a 48-inch storm sewer.



TRACKWORK

A field inspection of both the LIRR Atlantic Branch and the Montauk

Branch was made. Generally, the track is being maintained in good condition.

Existing LIRR trackage on the Montauk Branch was built between 1937 and consists of 112 lb. rails on wood ties.

The trackage on the Atlantic Branch was built between 1947 and 1959 and consists of both 100 lb. and 112 lb. rail on wood ties.

The LIRR requires that new trackwork on the Montauk will be 119 lb.

rail continuously welded on ballasted wood ties. The new track on the

Jamaica Viaduct will be direct fixation to structure. Since a major portion
of the track (40%) will be on new alignment from Jamaica Viaduct to the

bridge over North Conduit, the LIRR requires that all 3 tracks in this area
be new track.

The NYCTA track system will occupy much of the present LIRR alignment (47,000 L.F. of track) and some new alignment (20,000 L.F. of track). The new alignment will require a completely new track system with 100 lb. continuously welded rail on wood ties while the trackage on existing grade and alignment will be rehabilitated. The rehabilitation will consist of new 100 lb. continuously welded rail and ties on the existing ballasted base. Another possibility for rehabilitation of existing track is as follows: To convert the existing 100 and 112 lb. rails to a continuous welded rail by field welding and making necessary changes to the fastening system. A detailed field inspection at time of construction would be required to evaluate the condition of rails and ties to determine the feasibility. It is estimated that a savings of about \$600,000 could be realized if this method of rehabilitation could be used.



POWER - NYCTA

New electrification facilities will be provided for the NYCTA tracks and trains. Three new traction-power substations will be required for the route. The spacing and capacity of the substations will be based on supplying power to the trains as demanded by the operating schedule during maximum traffic periods within the limits of permissible voltage drops. Each traction substation will consist of two rectifier transformers and rectifiers with switching, overcurrent protection, relaying, switchgear and auxiliaries. Each complete rectifier unit (including rectifier, transformer, bus and switchgear) will have a continuous full load output rating of 3000 kw at 625 volts dc. After reaching a constant temperature following continuous full load, they shall be capable of delivering an overload current of 150 percent of full load for two hours and interposed cyclic overloads consisting of five periods of 300 percent of full load for one minute each and one period of 450 percent of full load for 15 seconds, equally spaced throughout the two-hour period.

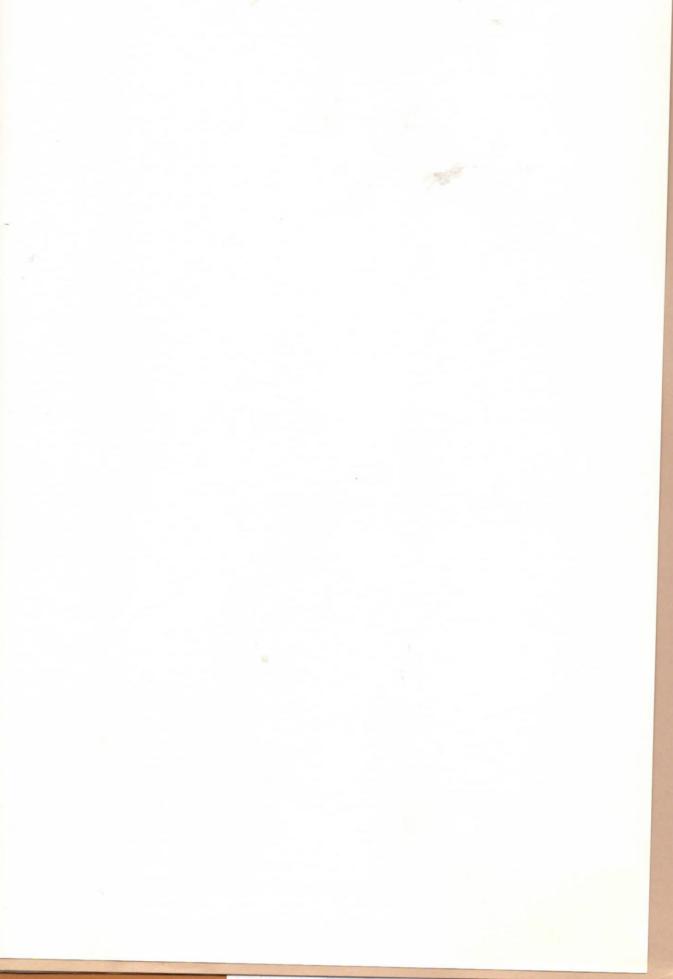
Each complete rectifier unit (including rectifier, transformer, cable, bus, and switchgear) will have a full load overall effciency of not less than 96.4 percent and a displacement power-factor of approximately 96 percent lagging. Total regulation, with both rectifiers operating in parallel, will be such as to provide output voltage on the dc switchgear bus of 625 volts at full load and shall not be less than 538 volts nor more than 668 volts at other loads. The rectifiers will be semiconductor type using silicon cells and will be designed to provide a fundamental twelve-phase ripple.



Primary ac feeders to each substation will be connected to the public utility power grid at the nearest accessible point. All circuit breakers will be wired for local as well as remote control for supervisory control from the power control center. The power supervisory control system will also provide remote status indication and telemetering of variable operating parameters.

Direct current switchgear will be provided to feed power from the positive bus to the contact or third rails. The cables feeding the third rails will have the low resistance required to restrict the voltage drop to the rails and the train motors. Each feeder will supply a section of third rail. A manual disconnect switch in each feeder will permit isolating each feeder from the third rail section it will feed during normal operation. During abnormal operation the sectionalizing and bypass switches can be closed and the disconnect switches opened. This will isolate a traction substation and permit power to flow through the contact rail from the adjacent substations.

The third rail will be the NYCTA standard 150 pounds-per-yard type. Its resistance shall not exceed 6.85 times that of pure copper. The third rail will be continuous except where gaps will be required for crossovers, scissors crossings, sectionalizing switches, substation bypass switches, etc. A gap will be left in each third rail near each traction substation and a normally open bypass switch will be connected across each gap. One gap will be left in each third rail between adjacent substations to sectionalize each track; normally open sectionalizing switches will be connected across all such gaps. Where gaps are required for facilities such as crossovers, the ends of the third rail will be connected by underground cable which will have sufficient conductivity to result in a voltage drop less than that in an equal length of third rail.



The third rails will have end approaches to facilitate agent of car contact shoes on and off the rails.

The running rails on the Mainline will be continuous welded rail

insulated joints provided as required for signaling. Bolted

construction will be used through interlockings, storage tracks and

Impedance bonds will be installed in the running rails to permit

the flow of direct current through the track while confining the signal

current to the desired track section. The direct current will return

the traction substation through running rails impedance bonds and

megative feeders. The positive and negative feeder cables will have the

same conductivity. Impedance bonds will also be used where cross-bonding

of running rails will improve the system operation.

Single rail track circuits and single rail propulsion returns will be used for the storage tracks. This can be done because slow train speeds will not require large accelerating current and one running rail will adequately carry the propulsion current. Both construction and maintenance costs will be lower for these single rail circuits.

Auxiliary power for the Traction Substation will be supplied from the same primary buses which supply the rectifier transformers. Two manual disconnect switches will permit using either bus to supply the transformer which will step the primary voltage down to 480 volts. The primary winding will be protected by fuses and the secondary winding by a circuit breaker. The transformer output will be fed through circuit breakers to passenger and traction substation normal and emergency panels, battery charger and other loads. An alternative source of power for the



The set through a fuse and a combination motor starter.

First, they are in the wrong location for the NYCTA

and the Baisley substation uses fuses for primary protection

and disconnect switches. These would have to be replaced by

treakers which could be remotely controlled and many other control

and to be controlled from the power control center. The Brinkerhoff

station is very old and should be replaced by modern, more efficient

In addition, many alterations would have to be made to it for

enter control. For these reasons, the two substations should be replaced.

The existing LIRR third rail, while having the same conductivity and meight per foot as NYCTA standard third rail, does have a different cross-section shape. This different shape will require mounting other hardware than that currently used by NYCTA requiring two different types of several parts to be stocked by NYCTA for spares. It is recommended, however, consideration be given to the use of the existing LIRR third rail by NYCTA because the resultant saving will more than offset the expense of stocking different spare parts. It will, therefore, only be necessary for the existing third rail to be rebuilt, modified and adjusted for NYCTA use. Of course, much new third rail will have to be installed for the siding and storage tracks. This new rail should conform to NYCTA standards.



TRACTION POWER - LIRR MONTAUK BRANCH

The existing system has a 700 volt, 150 lb. third rail with transmission lines generally on the north side utilizing both wood and steel poles with substations at Hillside, St. Albans and Laurelton. Much of the existing pole line must be replaced to accommodate the new third track and also the relocated signal and communication lines which are presently on the south side. In general, wood poles will be replaced by wood poles and existing steel poles in the vicinity of Holban Yards will be replaced by steel poles.

Power requirements dictate alterations to the existing substations at Laurelton & Hillside and a rebuilt substation at St. Albans.

SIGNALS AND COMMUNICATIONS - NYCTA

A new signaling system will be provided for the NYCTA tracks. This system will be compatible with existing NYCTA systems so that train operation and operating procedures will be the same for all lines. The signals system will be made up of three subsystems, namely: The Supervisory Control System, the Interlocking System and the Block Signaling System.

The supervisory control system will provide remote status indication and control for interlockings, track occupancies, switch heaters and automatic dispatch equipment. Status information and control will be transmitted by a direct wire diode-reed system between remote locations and Central Control.

A master control panel will be provided at Central Control to provide graphic and mimic representation of the following supervisory functions:

- 1. Train movement and locations
- 2. Track equipment status
- 3. Train running direction



An interlocking system of the relay type will be provided and arranged for automatic turnback of trains by means of crossovers and scissors crossings provided for that purpose at the selected locations. Supplementary operation of the system by a train dispatcher at Central Control will be provided by means of the supervisory control system and associated interposing equipment.

A completely automatic block signaling system will be provided and will supply coded track circuits and switch protection. Information from the coded track circuits will be received by CAB signal equipment on trains and will be used to control the speeds of trains through ATO equipment. The coded track circuits will utilize the same frequency and speed codes as presently used by the NYCTA system.

The length of track circuits will be physically determined by minibonds on the Mainline and by insulated joints for the storage tracks. The ideal length for track circuits will be calculated and the resulting circuits will be called blocks. The block boundaries will be selected to provide safe train operation. Pertinent factors will be used in the computations to determine the ideal length for each block. Among the track factors which will be used in the calculations are: civil speed limit, length and slope of grades, length and degree of curves, locations and types of interlockings, and locations of passenger stations. Train factors which will be used in calculations are: weight and load, traction motor characteristics, acceleration limitations, frontal area, internal friction, braking characteristics, and system and equipment reaction times. Appropriate safety factors will be used in calculations to assure safe operation at all times.



In speed-restricted zones, block boundaries and code change points will be so located to insure that trains entering lower speed zones will have time to decelerate to the lower speeds before entering the speed-restricted zones. Where there will be transitions to higher speeds, code change points and block boundaries will be so located to insure that the trains clear the lower speed zones before receiving the code for the higher speeds.

Switch protection will be provided at all interlockings. The speed codes will be so controlled as to apply the service brakes when the switches of the interlockings are neither in full normal or full reverse positions. When switches are reversed, the speed code applied to the approach track will be so selected as to produce the proper speed through the interlocking. After trains have passed the approach points, the switches will be locked in position and not released until trains have either stopped or passed completely through the interlockings.

Two control centers will be provided. The Mainline tracks will be controlled from Jamaica Yard; the storage tracks will be controlled by the Yardmaster from a control center to be built near Farmers Boulevard.

Three traffic blocks can be provided for the southbound track and three for the northbound track. These traffic blocks are dictated by the track plan. A traffic block is a section of track which can be electrically reversed by the signals system so that trains can run in the reverse direction on that track section.



The communications systems will include a two-way train radio and police radio base station at Baisley Boulevard, dial telephones, direct-wired magneto telephones, public address, closed circuit television and emergency alarms. A two-way train radio in the Yardmaster's office will be required.

The telephone system will provide automatic dial telephone communications between existing telephones and all new passenger stations, traction substations, shops, crossovers, and other facilities.

The public address system will permit either the central dispatcher or local station agents to make announcements in passenger stations. The central dispatcher will be able to select the station or stations at which he makes an announcement. Telephone lines will carry the key dispatcher's announcements from the train command center to the stations where the signal will be amplified by solid state audio power amplifiers. The amplifiers will have frequency response from 200 Hz to 5 kHz. A line transformer will be mounted on each loudspeaker frame; the transformers will be tapped to permit the adjustment of the sound level produced by the associated loudspeaker.

Television cameras will be installed in areas of passenger stations not under direct visual surveillance of the master token booth clerk. The video signals from cameras will be transmitted by cable to the master token booth for viewing on monitors. At least two monitors will be provided. Sequential Switchers, as required shall be installed in the booth to allow control of up to ten inputs per monitor and to allow the viewing of scenes from several cameras in sequential time intervals.



STEER AND COMMUNICATION SYSTEMS - LIRR MONTAUK BRANCH

The existing signal system is a one-direction system on each track with matter wayside signals, automatic cab signals and automatic speed control.

Both signal and communication cables are on a common wooden pole line on the south side.

with addition of the third track, the signal system will be converted into reverse signaling on all three tracks with automatic cab signals, and automatic speed control. Wayside signals will be eliminated. There will be a one direction interlock at St. Albans for freight movements in and out of Holban Yard providing flexibility of routing for the three main tracks.

New interlocking facilities at Rosedale will be required to go from three to four tracks. New interlocking changes will be required at Union Hall Street. Major changes of the Hall interlock at Jamaica Station are also required.

Existing signal and communication transmission lines are presently on wooden poles on the south side. They will be rebuilt on a common pole line on the north side and occupy the same pole as the traction power lines.

RIGHT-OF-WAY

Construction of Alternative 2 affects a total of 21 properties along the Atlantic Branch and one property along the Montauk Branch. Three streets are affected along the Atlantic Branch; namely, 166th Street, Smith Street, and 129th Avenue. The two streets affected on the Montauk Branch are Montauk Street and 139th Avenue.

The single property affected on the Montauk Branch is located east of 219th Street. The relocation of the existing south side retaining wall and the extension of the wall results in a slight encroachment upon Lot No. 17 within Block No. 13143. Payment of a partial fee is necessary; no relocation



is required. A 10-foot swath of 139th Avenue paralleling the existing right-of-way line must also be acquired to construct the relocated retaining wall. These properties are shown in plan and photograph on Figure 5-22. Further down the line, a 15-foot long, 5-foot wide section of Montauk Street, parallel to the line, must be acquired for the construction of a new retaining wall west of 120th Avenue. This section is shown on Figure 5-23.

Construction of the 108th-109th Avenue Station on the Atlantic Branch results in the necessary acquisition or partial acquisition of seven properties, shown on Figure 5-24. Six entire properties must be acquired to construct the south station entrance; of these, four are occupied by homes and relocations must be provided. The other two lots are vacant. A section of the N.Y.C. Housing Authority on the north side must be acquired for the north station entrance. No buildings are affected by this acquisition.

The existing Dell Bus Company garage at the corner of Linden Boulevard and New York Boulevard must be acquired to construct the proposed Linden Boulevard Station.

Additional property must be acquired at the intersection of 166th Street, Smith Street and 119th Avenue along the south side of the Atlantic Branch to construct the proposed power substation. Two vacant properties belonging to Metro Transportation and dead-end portions of 166th Street and Smith Street must be acquired. This area is shown on Figure 5-26.

A portion of the large parking lot for Rochdale Village bordering the proposed Baisley Boulevard Station on the south must be taken for the station entrance. To the east of this area at 129th Avenue, a portion of a lot listed as the property of the City of New York must be acquired to facilitate construction of the north proposed retaining wall. The Baisley



Boulevard property is shown on Figure 5-27, the other on Figure 5-28.

The proposed storage area adjacent to Farmers Boulevard requires the taking of three vacant properties. These properties are shown on Figure 5-29.

Construction of the proposed Springfield Boulevard Station results in the acquisition of six properties. A partial acquisition of a seventh property is necessary. These property acquisitions are necessitated by the station entrance, the proposed bus plaza located on the north corner of Springfield Boulevard and 141st Avenue, and the employee access area along Coombs Street. Figure 5-30 details these property acquisitions.

The construction of Alternative 2 requires that a total of 22 properties be acquired, 8 of which require relocations. Five city street sections must be acquired.

If the Linden Boulevard station alternate described in Section 3 is implemented, 16 properties and 2 street sections would have to be acquired. Five of the 16 properties are vacant; the remainder are occupied by one and two-story frame commercial businesses and private residences. The 16 properties are shown on Figure 5-25. The portions of Bedell Street and Meyer Avenue shown on Figure 5-31 must be taken to provide the vehicular turnaround which is an integral part of the station scheme. As previously described, this scheme was not recommended because of the excessive property involvement and the restricted turnaround provided.



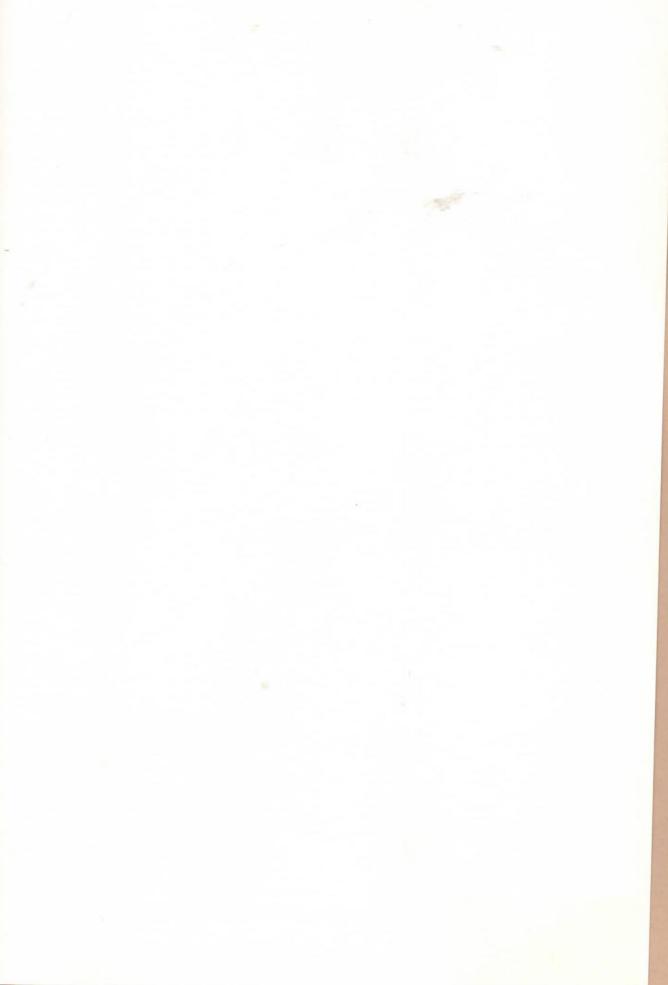
ROUTE 131-D SOUTHEAST QUEENS LINE VIA LIRR ATLANTIC BRANCH

BOROUGH OF QUEENS

PROPOSED CONSTRUCTION OF ROUTE 131-D ON ATLANTIC BRANCH

DESCRIPTION OF PROPERTY AFFECTED

Block	Lot	Street Address	Description	Remarks	Figure
10146	2	108-47 157th St.	2 Sty. Frame (R)	Fee-Relocation	5-24
10146	3	157th St.	Vacant	Fee- No Relocation	5-24
10146	4	157th St.	Vacant	Fee- No Relocation	5-24
10146	5	108-41 157th St.	2 Sty. Frame (R)	Fee-Relocation	5-24
10146	6	108-39 157th St.	2 Sty. Frame (R)	Fee-Relocation	5-24
10146	7	108-33 157th St.	2 Sty. Frame (R)	Fee-Relocation	5-24
10146	51	108-02-60 160th St.	4 Sty. Brick Apts. (R)	Partial Fee- No Relocation	5-24
12200	52	Linden Blvd.	1 & 2 Sty.Brick (C)	Fee-Relocation	5-25
12357	41	166th St.	Vacant	Fee- No Relocation	5-26
12363	101	119th Ave.	Vacant	Fee- No Relocation	5-26
12529	1	Garret St.	Vacant	Fee- No Relocation	5-29
12529	6	Garret St.	Vacant	Fee- No Relocation	5-29
12529	35	Bedell St.	Power Plant & Parking Lot (R)	Partial Fee- No Relocation	5-27
12529	377	Garret St.	Vacant	Fee- No Relocation	5-29
13043	32	Coombs St.	Vacant	Partial Fee- No Relocation	5-30
13044	44	Cor. of Springfield Blvd. & 141st Ave.	Vacant	Fee- No Relocation	5-30



ROUTE 131-D SOUTHEAST QUEENS LINE VIA LIRR ATLANTIC BRANCH

BOROUGH OF QUEENS

PROPOSED CONSTRUCTION OF ROUTE 131-D ON ATLANTIC BRANCH (Continued) DESCRIPTION OF PROPERTY AFFECTED

Block	Lot	Street Address	Description	Remarks	Figure
13044	58	Coombs St.	Vacant	Partial Fee- No Relocation	5-30
13057	70	141st Ave.	Vacant	Fee - No Relocation	5-30
13057	77	Springfield Blvd.	2 Sty. Frame (R)	Fee-Relocation	5-30
13057	78	Springfield Blvd.	2 Sty. Frame (R)	Fee-Relocation	5-30
13057	80	Springfield Blvd.	1 Sty. Frame (R)	Fee-Relocation	5-30

DESCRIPTION OF STREETS AFFECTED

166th Street	Property to be acquired is that portion of 166th Street south
	of existing LIRR southern R.O.W. to the northern line of
	119th Ave. Fig. 5-26

Smith Street Property to be acquired is that portion of Smith Street south of existing LIRR southern R.O.W. to the northern line of 119th Ave. Fig. 5-26

129th Ave. Property to be acquired is defined as Block 12529 Lot 202 on tax map and consists of an approximate 24-foot strip adjacent to existing northerly LIRR R.O.W. Fig. 5-28



ROUTE 131-D SOUTHEAST QUEENS LINE VIA LIRR ATLANTIC BRANCH

B OROUGH OF QUEENS

PROPOSED CONSTRUCTION OF LIRR THIRD TRACK ON MONTAUK BRANCH

DESCRIPTION OF PROPERTY AFFECTED

Block	Lot	Street Address	Description	Remarks	Figure
13143	17	219-16 139th Ave.	2 1/2 Sty.Frame (R)	Partial Fee- No Relocation	5-22

DESCRIPTION OF STREETS AFFECTED

Montauk Street

Property to be acquired is approximately 5 feet in width and
15 feet in length and adjacent to existing LIRR northerly
R.O.W. and westerly 120th Ave. Line. Fig. 5-23

Property to be acquired is an approximate 10-foot width of that portion of 139th Ave. adjacent to existing LIRR westerly R.O.W. Fig. 5-22



ROUTE 131-D SOUTHEAST QUEENS LINE VIA LIRR ATLANTIC BRANCH

BOROUGH OF QUEENS

PROPOSED CONSTRUCTION OF ROUTE 131-D ON ATLANTIC BRANCH ALTERNATE LOCATION OF LINDEN BOULEVARD STATION

DESCRIPTION OF PROPERTY AFFECTED

1ock	Lot	Street	Address	Description		Remarks	Figure
2178	204	Linden	Blvd.	Vacant		Fee- No Relocation	5-31
2178	205	Linden	Blvd.	Vacant		Fee- No Relocation	5-31
2178	206	Linden	Blvd.	Vacant		Fee- No Relocation	5-31
2178	207	112-81 [Linden Blvd.	2 Sty.Frame	(R)	Fee-Relocation	5-31
2178	208	112-77	Bedell St.	2 Sty.Frame	(R)	Fee-Relocation	5-31
2178	210	112-73 E	Bedell St.	2 Sty.Frame	(R)	Fee-Relocation	5-31
2178	212	112-71 E	Bedell St.	2 Sty.Frame	(R)	Fee-Relocation	5-31
2178	213	112-65 E	Bedell St.	Vacant		Fee-No Relocation	5-31
196	1	159-08 M	Meyer Ave.	1 Sty.Frame	(C)	Fee-Relocation	5-31
196	5	159-10 M	Meyer Ave.	2 Sty.Frame	(R)	Fee-Relocation	5-31
196	7	159-16 M	Meyer Ave.	2 Sty.Frame	(R)	Fee-Relocation	5-31
196	9	159-18 M	Meyer Ave.	2 Sty.Frame	(R)	Fee-Relocation	5-31
196	10	159-20 M	Meyer Ave.	2 Sty.Frame	(R)	Fee-Relocation	5-31
196	12	112-74 B	Bedell St.	2 Sty.Frame	(R)	Fee-Relocation	5-31
196	15	Linden B	Blvd .	1 Sty.Frame	(C)	Fee-Relocation	5-31
196	67	Linden B	lvd.	Vacant		Fee-No Relocation	5-31
	2178 2178 2178 2178 2178 2178 2178 2178	2178 204 2178 205 2178 206 2178 207 2178 208 2178 210 2178 212 2178 213 2196 1 2196 5 2196 7 2196 9 196 10 196 12 196 15	2178 204 Linden 2178 205 Linden 2178 206 Linden 2178 207 112-81 2178 208 112-77 2178 210 112-73 2178 212 112-71 2178 213 112-65 2196 1 159-08 2196 5 159-10 2196 7 159-16 2196 9 159-18 2196 10 159-20 2196 12 112-74 2196 15 Linden	2178 204 Linden Blvd. 2178 205 Linden Blvd. 2178 206 Linden Blvd. 2178 207 112-81 Linden Blvd. 2178 208 112-77 Bedell St. 2178 210 112-73 Bedell St. 2178 212 112-71 Bedell St. 2178 213 112-65 Bedell St. 2178 213 112-65 Bedell St. 2196 1 159-08 Meyer Ave. 2196 5 159-10 Meyer Ave. 2196 7 159-16 Meyer Ave. 2196 9 159-18 Meyer Ave. 2196 10 159-20 Meyer Ave. 2196 12 112-74 Bedell St. 2196 15 Linden Blvd .	2178 204 Linden Blvd. Vacant 2178 205 Linden Blvd. Vacant 2178 206 Linden Blvd. Vacant 2178 207 112-81 Linden Blvd. 2 Sty.Frame 2178 208 112-77 Bedell St. 2 Sty.Frame 2178 210 112-73 Bedell St. 2 Sty.Frame 2178 212 112-71 Bedell St. 2 Sty.Frame 2178 213 112-65 Bedell St. Vacant 2196 1 159-08 Meyer Ave. 1 Sty.Frame 2196 5 159-10 Meyer Ave. 2 Sty.Frame 2196 7 159-16 Meyer Ave. 2 Sty.Frame 2196 9 159-18 Meyer Ave. 2 Sty.Frame 2196 10 159-20 Meyer Ave. 2 Sty.Frame 2196 10 159-20 Meyer Ave. 2 Sty.Frame 2196 12 112-74 Bedell St. 2 Sty.Frame 2196 15 Linden Blvd . 1 Sty.Frame	2178 204 Linden Blvd. Vacant 2178 205 Linden Blvd. Vacant 2178 206 Linden Blvd. Vacant 2178 207 112-81 Linden Blvd. 2 Sty.Frame (R) 2178 208 112-77 Bedell St. 2 Sty.Frame (R) 2178 210 112-73 Bedell St. 2 Sty.Frame (R) 2178 212 112-71 Bedell St. 2 Sty.Frame (R) 2178 213 112-65 Bedell St. Vacant 2196 1 159-08 Meyer Ave. 1 Sty.Frame (R) 2196 5 159-10 Meyer Ave. 2 Sty.Frame (R) 2196 7 159-16 Meyer Ave. 2 Sty.Frame (R) 2196 9 159-18 Meyer Ave. 2 Sty.Frame (R) 2196 10 159-20 Meyer Ave. 2 Sty.Frame (R) 2196 12 112-74 Bedell St. 2 Sty.Frame (R) 2196 15 Linden Blvd . 1 Sty.Frame (R)	2178 204 Linden Blvd. Vacant Fee- No Relocation 2178 205 Linden Blvd. Vacant Fee- No Relocation 2178 206 Linden Blvd. Vacant Fee- No Relocation 2178 207 112-81 Linden Blvd. 2 Sty.Frame (R) Fee-Relocation 2178 208 112-77 Bedell St. 2 Sty.Frame (R) Fee-Relocation 2178 210 112-73 Bedell St. 2 Sty.Frame (R) Fee-Relocation 2178 212 112-71 Bedell St. 2 Sty.Frame (R) Fee-Relocation 2178 213 112-65 Bedell St. Vacant Fee-No Relocation 2178 213 112-65 Bedell St. Vacant Fee-No Relocation 2179 1 159-08 Meyer Ave. 1 Sty.Frame (C) Fee-Relocation 2196 2 159-10 Meyer Ave. 2 Sty.Frame (R) Fee-Relocation 2196 3 159-16 Meyer Ave. 2 Sty.Frame (R) Fee-Relocation 2196 9 159-18 Meyer Ave. 2 Sty.Frame (R) Fee-Relocation 2196 10 159-20 Meyer Ave. 2 Sty.Frame (R) Fee-Relocation 2196 10 159-20 Meyer Ave. 2 Sty.Frame (R) Fee-Relocation 2196 12 112-74 Bedell St. 2 Sty.Frame (R) Fee-Relocation 2196 15 Linden Blvd . 1 Sty.Frame (R) Fee-Relocation 2196 15 Linden Blvd . 1 Sty.Frame (C) Fee-Relocation



ROUTE 131-D SOUTHEAST QUEENS LINE VIA LIRR ATLANTIC BRANCH

BOROUGH OF QUEENS

ALTERNATE LOCATION OF ROUTE 131-D ON ATLANTIC BRANCH

DESCRIPTION OF STREETS AFFECTED

Property to be acquired is that portion of Bedell Street between the N.W. line of Meyer Avenue and the Westerly

P of Lot 12178-213. Fig. 5-31

Property to be acquired consists of Meyer Avenue between existing LIRR southern R.O.W. and the northerly line of Bedell Street. Also an approximate 4-foot strip of Meyer Avenue adjacent to northern LIRR R.O.W. Fig. 5-31



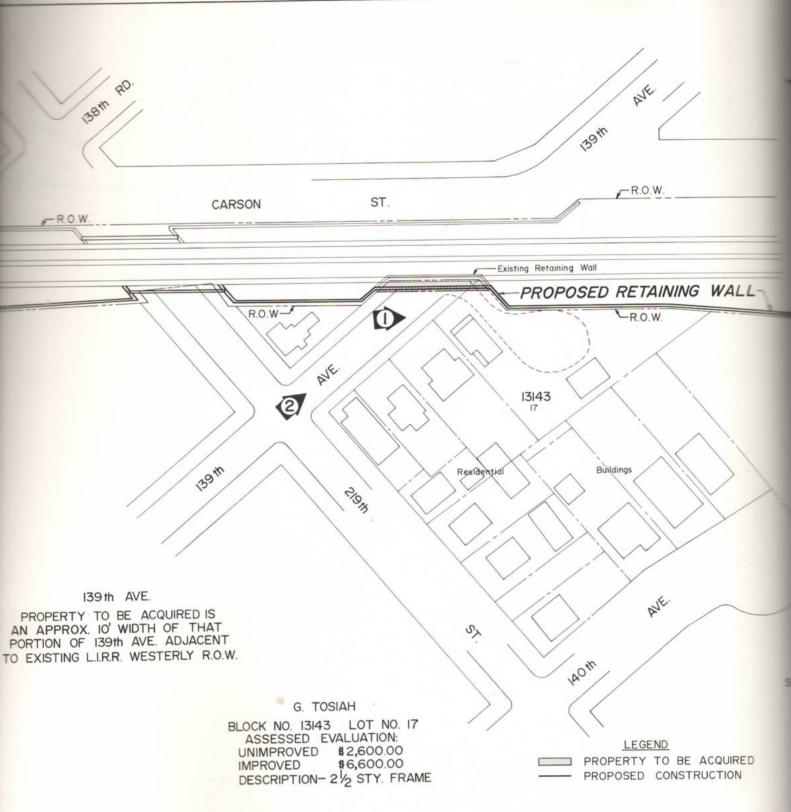
NOISE CONTROL

The primary objective of noise control is an acoustically comfortable environment for the transit patron coupled with a minimum transmission of noise and vibration to the wayside community. In order to achieve these ends, the primary sources of transit noise must be identified and minimized to a level of compatibility with the surrounding area.

The project area contains light industry and residential areas, and is criss-crossed with busy cross-city highways and streets. The estimated ambient noise level for a residential/commercial area such as this is 50-70 dBA (daytime) and 45-65 dBA (night). Transportation systems in the area are one of the main sources of noise; a typical 100-foot freight train typically produces 75 dBA, and a typical freeway causes a noise level of 65 dBA. Trucks and buses can raise the noise level to 90 dBA when passing through the area. Measurements of typical rapid transit systems have shown the average peak noise levels to be 80-90 dBA. When this noise level is compared to that of the existing community, especially including the effect of the existing transportation systems, it is evident that this increase of 5-10 dBA is not excessive and can be reduced through design methods and construction procedures. An increase of the ambient noise level less than 5 dBA is generally insignificant, and an increase of 5 to 10 dBA is usually marginally acceptable. Increases in the noise level of 10-15 dBA can create serious problems, and any increase over 15 dBA will produce a strong public reaction. Therefore, remedial measures reducing the generated noise should be adopted for both the Montauk and Atlantic Branches.

The major noise source for this project is the wheel-rail mechanism, which causes noise through wheel-rail irregularities, wheel flats, impact, braking, and squeal on curves. The recommended track system for the NYCTA system is a ballasted continuous rail system. To achieve maximum economy,





1974-75 ASSESSED EVALUATIONS LISTED

MONTAUK BRANCH



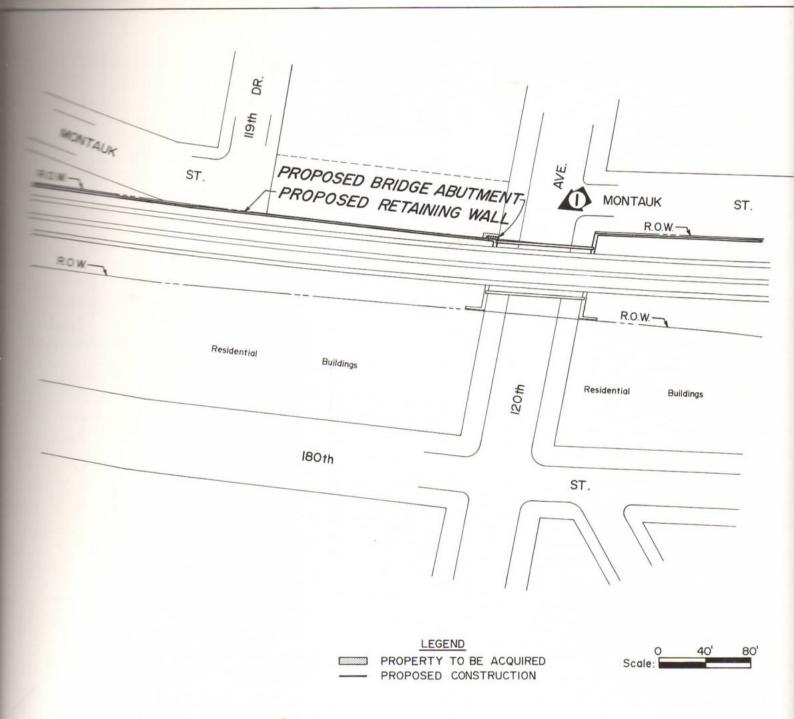


Scale:

2

NYCTA ROUTE 131-D PROPERTY ACQUISITION AT 139 TH AVE





MONTAUK STREET

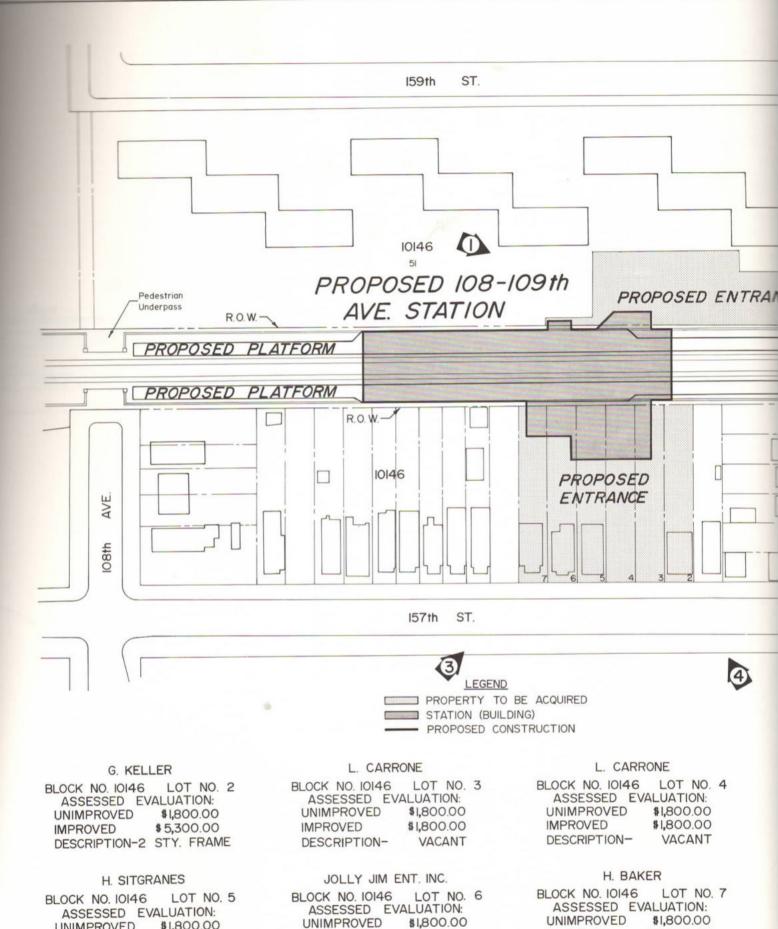
PROPERTY TO BE ACQUIRED IS APPROX. 5' WIDTH, 15' LENGTH ADJACENT TO EXISTING L.I.R.R. NORTHERLY R.O.W. & WESTERLY 120th AVE. LINE

MONTAUK BRANCH



NYCTA ROUTE 131-D PROPERTY ACQUISITION AT 120 TH AVE





IMPROVED

\$4,100.00

DESCRIPTION-2 STY. FRAME

IMPROVED

\$5,400.00

DESCRIPTION-2 STY. FRAME

\$1,800.00

\$4,300.00

DESCRIPTION-2 STY. FRAME

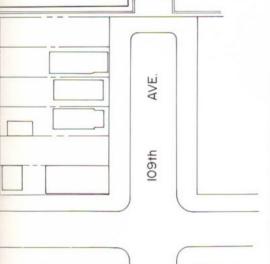
UNIMPROVED

IMPROVED





2



ENTRANCE

4

(2)

Pedestrian

Underpass







1974-75 ASSESSED EVALUATIONS LISTED

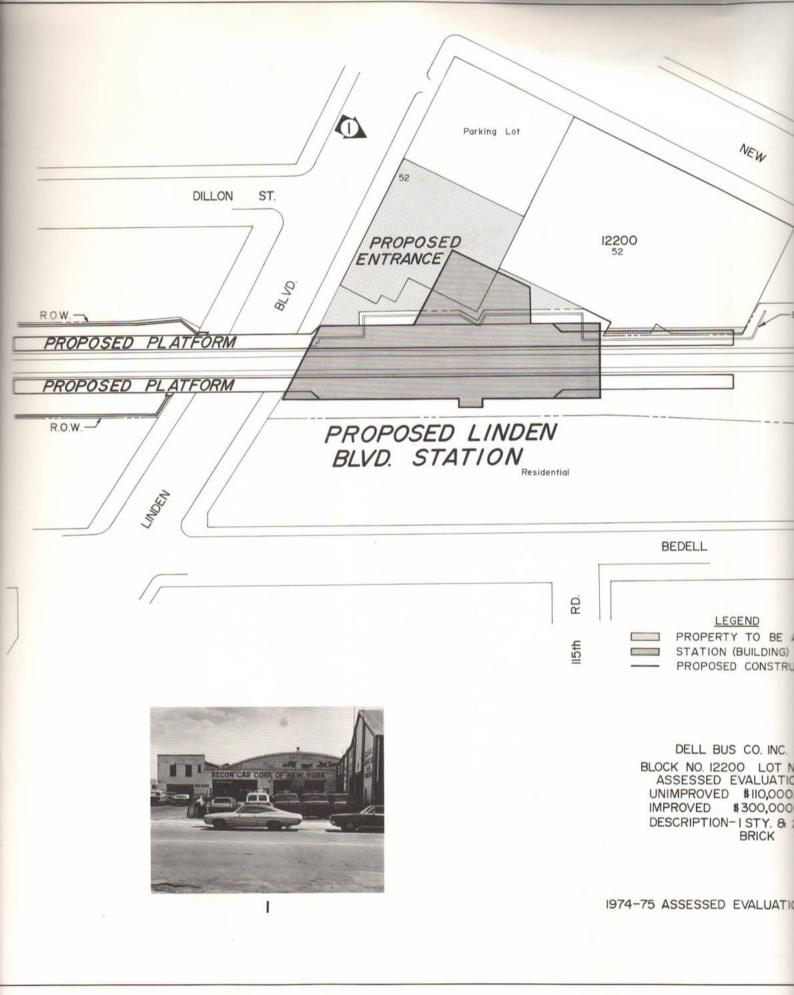
40'

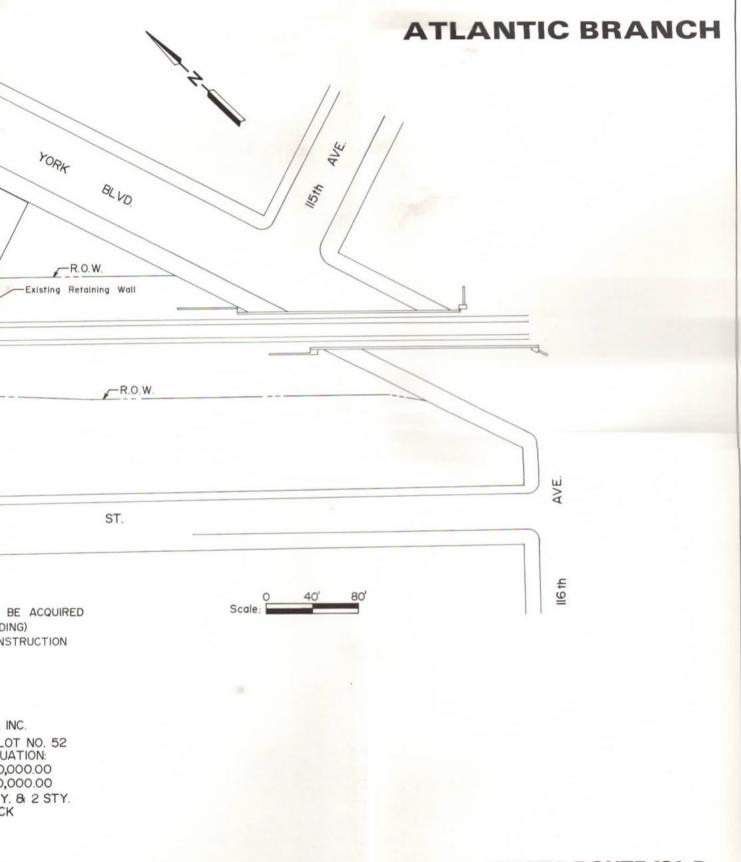
Scale:

N.Y.C. HOUSING AUTH. BLOCK NO. 10146 LOT NO. 51 ASSESSED EVALUATION: UNIMPROVED \$90,000.00 **IMPROVED** \$925,000.00 DESCRIPTION- (3) 4 STY. BRICK APARTMENTS

NYCTA ROUTE 131-D PROPERTY ACQUISITION **FOR 108-109 TH AVE STATION**



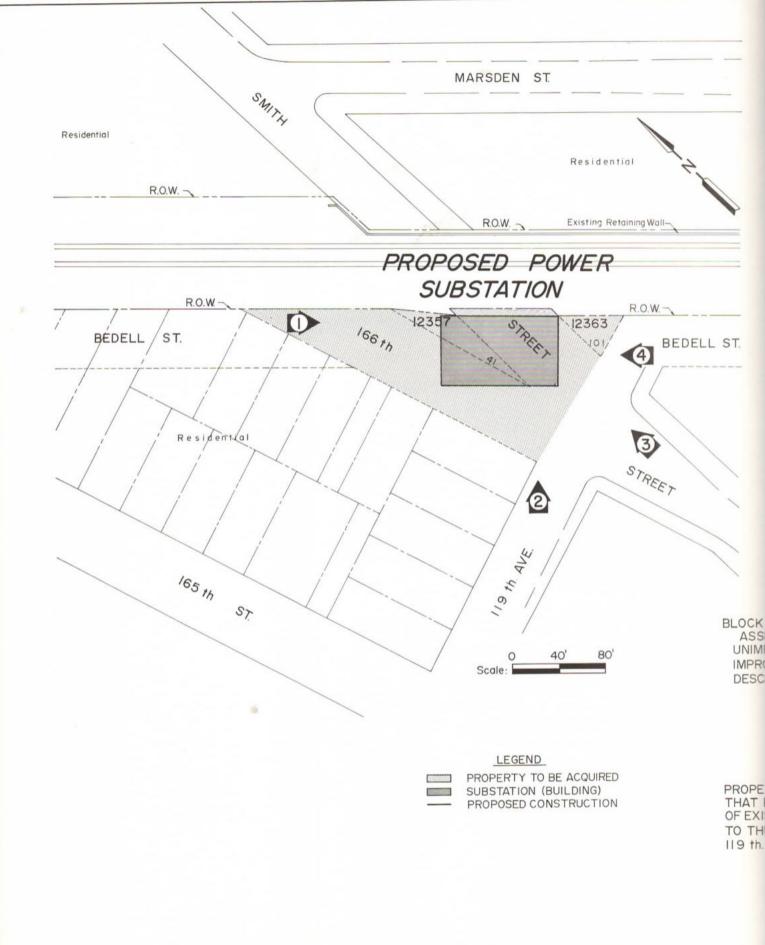




UATIONS LISTED

NYCTA ROUTE 131-D
PROPERTY ACQUISITION
FOR PROPOSED
LINDEN BLVD STATION



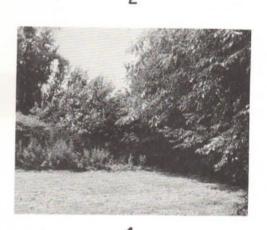








3



METRO TRANS.

BLOCK NO. 12357 LOT NO.41
ASSESSED EVALUATION:
UNIMPROVED
IMPROVED
DESCRIPTION — VACANT

ST

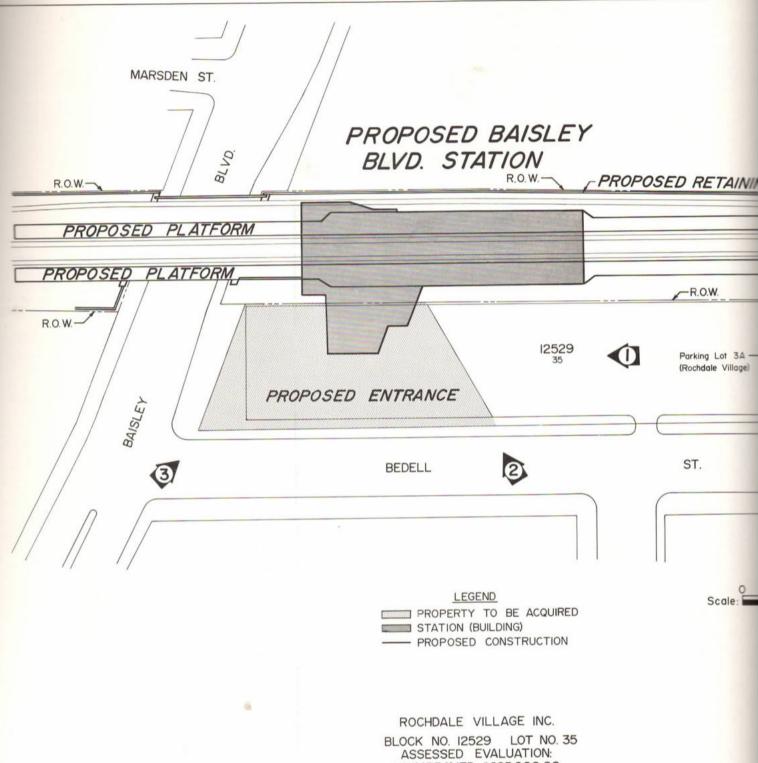
METRO TRANS.
BLOCK NO. 12363 LOT NO. 101
ASSESSED EVALUATION:
UNIMPROVED
IMPROVED
DESCRIPTION — VACANT

I66 th. STREET
PROPERTY TO BE ACQUIRED IS
THAT PORTION OF I66th. ST. SOUTH
OF EXIST. L.I.R.R. SOUTHERN R.O.W.
TO THE NORTHERN LINE OF
II9 th. AVE.

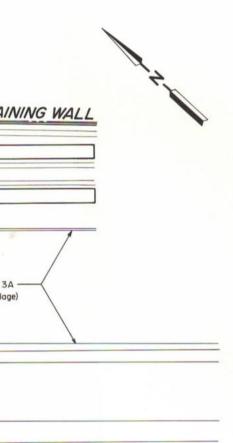
SMITH STREET
PROPERTY TO BE ACQUIRED IS
THAT PORTION OF SMITH ST.
SOUTH OF EXIST. L.I.R.R. SOUTHERN
R.O.W. TO THE NORTHERN LINE
OF 119 th AVE.

NYCTA ROUTE 131-D
PROPERTY ACQUISITION
FOR POWER SUBSTATION
AT 166 TH STREET





BLOCK NO. 12529 LOT NO. 35
ASSESSED EVALUATION:
UNIMPROVED \$625,000.00
IMPROVED \$6,125,000.00
DESCRIPTION (PARTIAL)—
PARKING LOT 3A







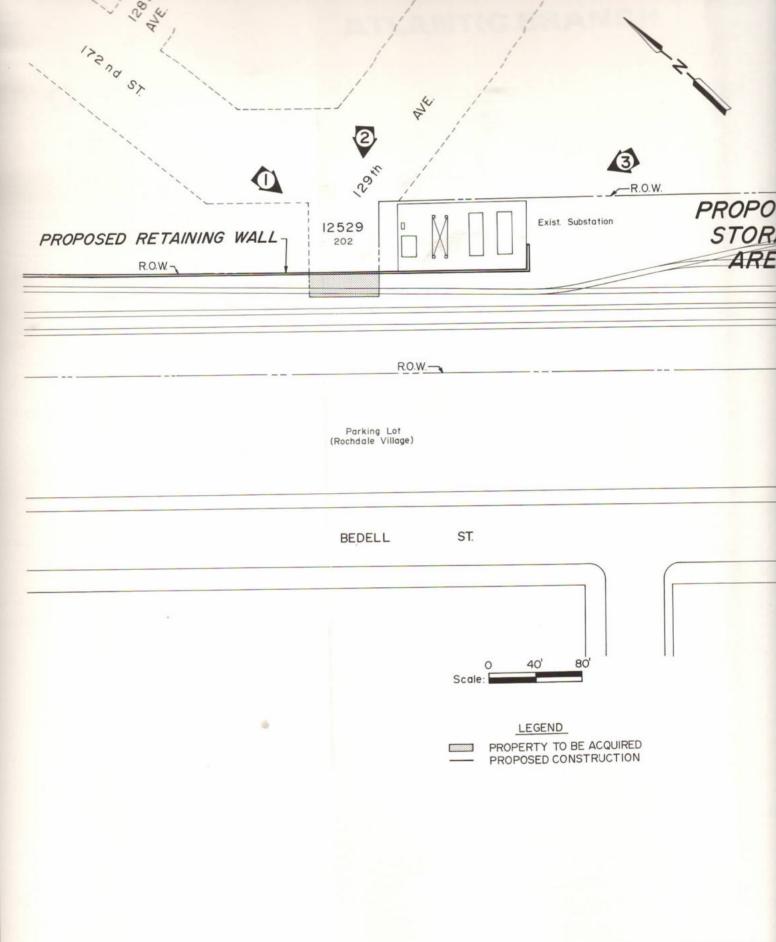




3

NYCTA ROUTE 131-D
PROPERTY ACQUISITION
FOR BAISLEY BLVD STATION









2



3

ROPOSED TORAGE AREA

CITY OF NEW YORK

BLOCK NO. 12529 LOT NO. 202

DESCRIPTION- 129th AVE. (VACANT)

PROPERTY TO BE ACQUIRED,

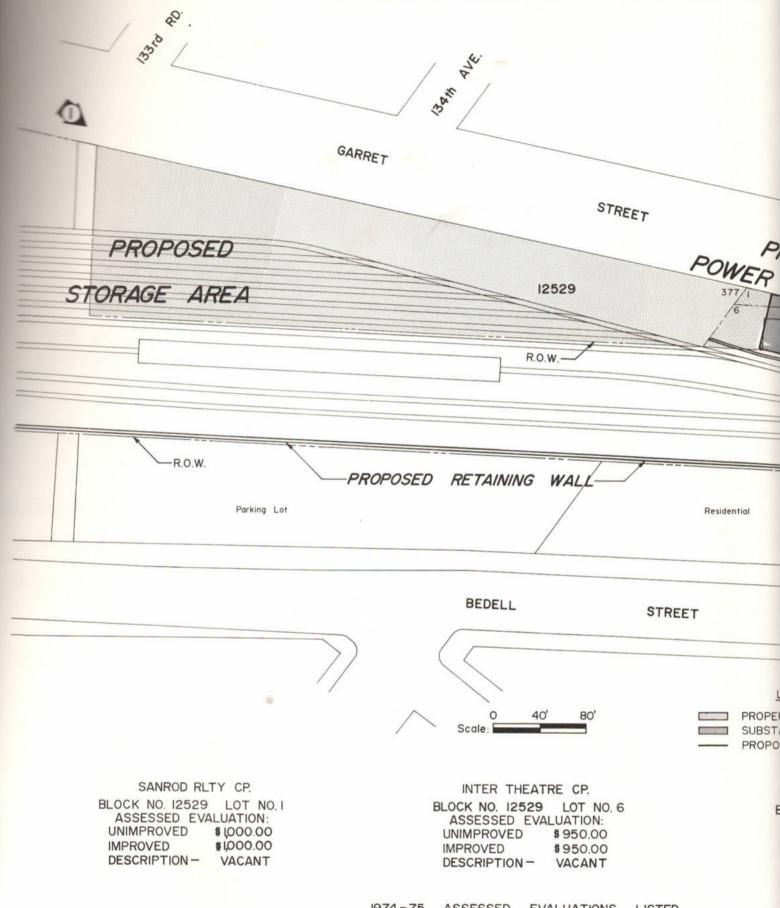
CONSISTS OF AN APPROX. 24'

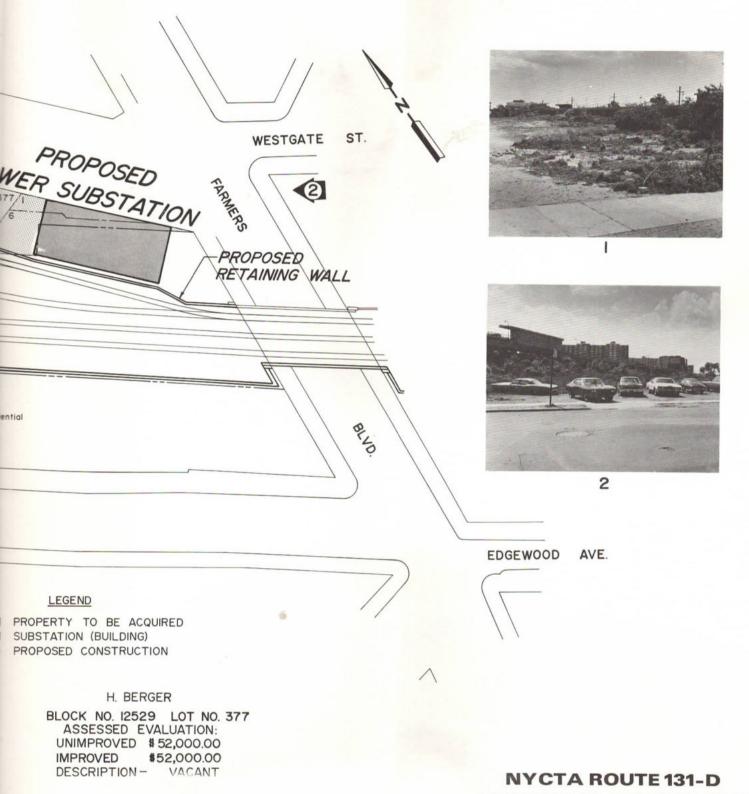
STRIP ADJACENT TO EXIST.

NORTHERLY L.I.R.R. R.O.W.

NYCTA ROUTE 131-D PROPERTY ACQUISITION AT 129 TH AVE

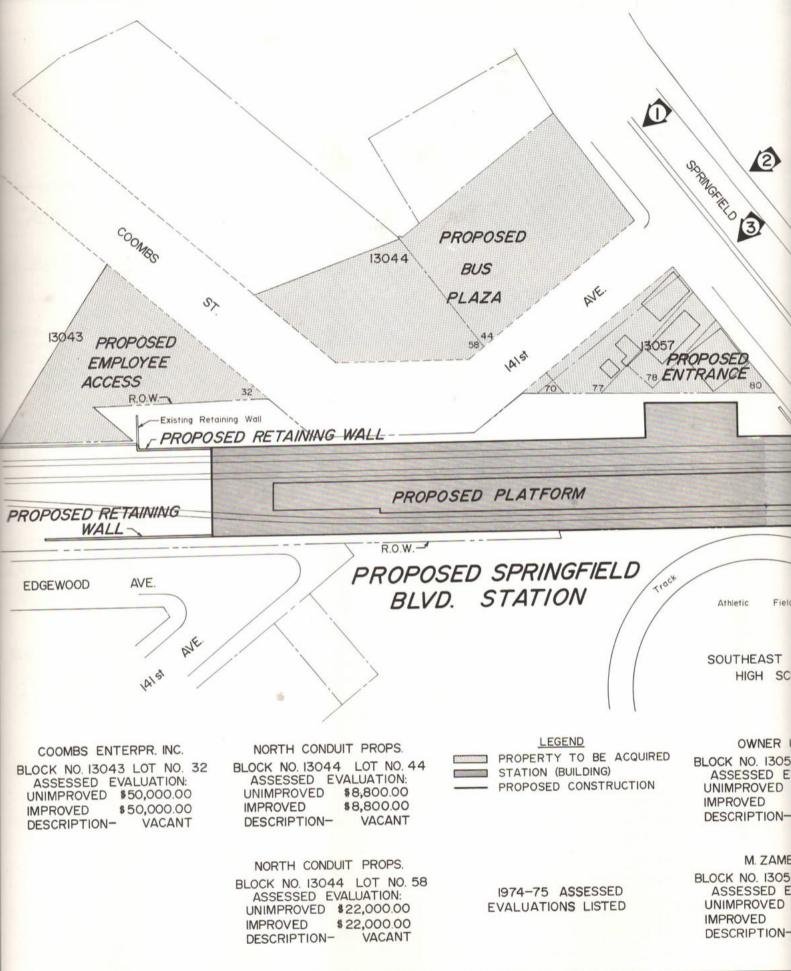


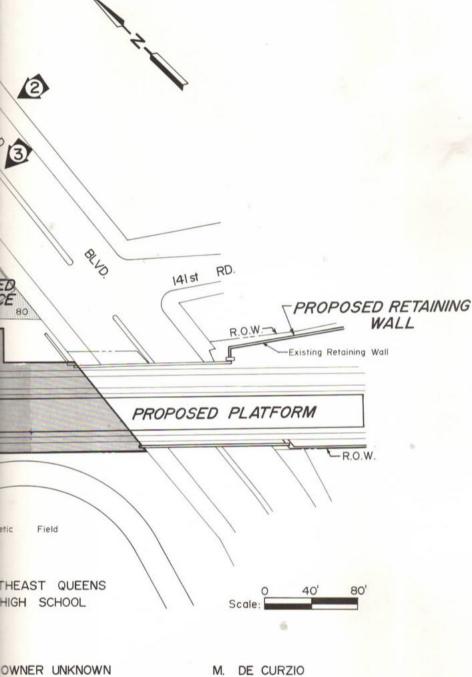




PROPERTY ACQUISITION FOR STORAGE AREA AND POWER SUBSTATION AT FARMERS BLVD











3

NO. 13057 LOT NO. 70 SSED EVALUATION: PROVED VED

VACANT

BLOCK NO. 13057 LOT NO. 77 ASSESSED EVALUATION: UNIMPROVED \$1,750.00 **IMPROVED** \$7,000.00 DESCRIPTION-2 STY. FRAME

M. ZAMBROTTO

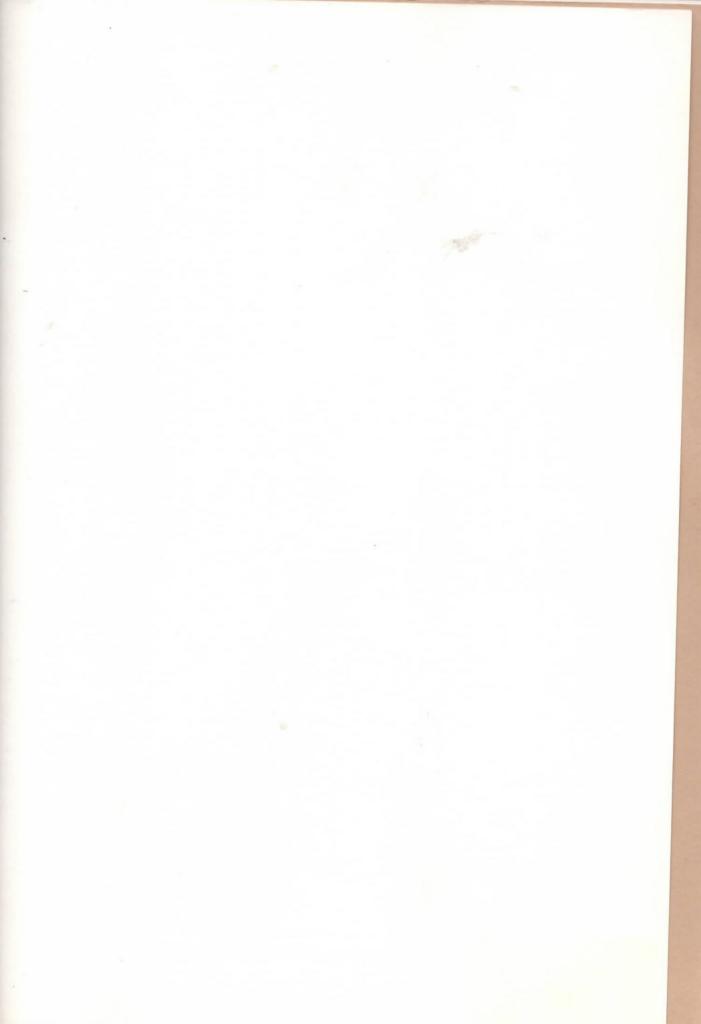
RIPTION-

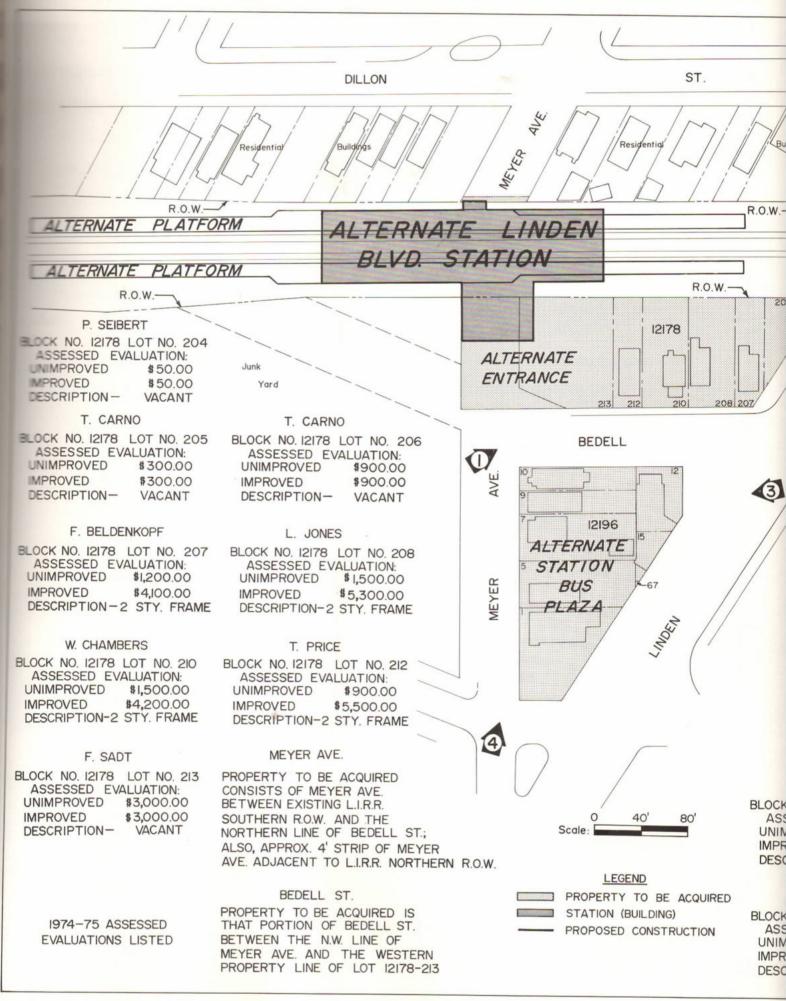
NO. 13057 LOT NO. 78 ESSED EVALUATION: PROVED \$ 1,000.00 VED \$5,800.00 RIPTION-2 STY. FRAME

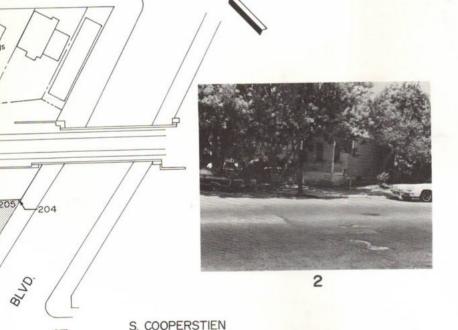
REGO CRESCENT BLOCK NO. 13057 LOT NO. 80 ASSESSED EVALUATION: UNIMPROVED \$4,500.00

IMPROVED \$14,000.00 DESCRIPTION-I STY. FRAME

NYCTA ROUTE 131-D PROPERTY ACQUISITION FOR SPRINGFIELD BLVD STATION







\$21,000.00





3



IMPROVED

BLOCK NO. 12196 LOT NO. 1 ASSESSED EVALUATION: UNIMPROVED \$13,000.00

DESCRIPTION- I STY. FRAME

BLOCK NO. 12196 LOT NO. 5
ASSESSED EVALUATION:
UNIMPROVED \$1,600.00
IMPROVED \$4,400.00
DESCRIPTION-2 STY. FRAME

A. COTTON

ST.

BLOCK NO. 12196 LOT NO. 7
ASSESSED EVALUATION:
UNIMPROVED \$1,600.00
IMPROVED \$5,300.00
DESCRIPTION-2 STY. FRAME



A. WILLIAMS

K NO. 12196 LOT NO. 9
SESSED EVALUATION:
MPROVED \$800.00
ROVED \$6,000.00
CRIPTION-2 STY. FRAME

G. WILLIAMS

K NO. I2I96 LOT NO. IO SESSED EVALUATION:
MPROVED \$1,000.00
ROVED \$5,800.00
CCRIPTION-2 STY. FRAME

H. SAWYER

BLOCK NO. 12196 LOT NO. 12
ASSESSED EVALUATION:
UNIMPROVED \$1,400.00
IMPROVED \$6,700.00
DESCRIPTION-2 STY. FRAME

V. SAWYER

BLOCK NO. 12196 LOT NO. 15
ASSESSED EVALUATION:
UNIMPROVED \$3,000.00
IMPROVED \$21,000.00
DESCRIPTION-1 STY. FRAME

OWNER UNKNOWN

BLOCK NO. 12196 LOT NO. 67
ASSESSED EVALUATION:
UNIMPROVED \$ 50.00
IMPROVED \$ 50.00
DESCRIPTION VACANT

NYCTA ROUTE 131-D
PROPERTY ACQUISITION
FOR ALTERNATE
LINDEN BLVD STATION

FIG. 5-31



the existing ballasted LIRR stick rail track is to be retained where alignment permits for NYCTA operations. However, the existing stick rail is to be welded in the field to create a continuous system. Likewise, all new LIRR tracks should be continuous rail and the existing rail to remain should be converted to continuous rail. In conjunction with new rail installation, the existing track should be carefully inspected to eliminate all defective rail equipment. The resulting continuous rail system will reduce generated noise by 5 dBA or more.

It should be noted that there is no substitute for good maintenance when controlling noise. Through careful maintenance, the elimination of such irregularities as wheel flats, rough rail, rough wheels, and rail corrugations results in corresponding noise level decreases of 8-10 dBA, 3-6 dBA and up to 15 dBA, respectively.

Another prime source of noise is wheel squeal on curves. This has been negated on this project by the track geometry, which, by following NYCTA standards, does not incorporate any curves tight enough to generate excessive squeal.

All structures on both lines utilize ballasted decks except the Jamaica Viaduct on the Montauk Branch. A direct connection of the continuous rail to the deck coupled with the use of resilient energy-absorbing pads should be considered.

The above detailed methods are recommended to control the major noise source, wheel-rail interaction. Other noise sources result from propulsion and auxiliary sources. Propulsion noise is generated by the traction motor, gear box, and power collector. The use of the new transit cars proposed for the route will reduce generated noise and vibration through the use of lightweight air-spring wheel trucks. Noise from auxiliary equipment emanates from air conditioners, power substations, and similar sources.



Stations will employ sound-deadening acoustical barriers to block much of the braking noise and noise generated by the auxiliary car equipment. Also, the stations employ acoustical ceilings to deaden noise inside.

As a result of this project, generated noise along the Atlantic Branch will be reduced through the elimination of LIRR facilities and the subsequent replacement with NYCTA facilities. The NYCTA system generates less noise by itself, and the implementation of the noise-reducing measures previously discussed further reduces community impact. The increase in passenger train movements on the Montauk Branch will not necessarily increase noise intensity. Due to the removal of stations, station noise and noise generated by braking and acceleration of trains through the existing curved station approaches will be eliminated. Wheel to rail noise will be reduced by the adoption of continuous-welded rail.



CONSTRUCTION CONTRACTS, METHODS & SCHEDULING

The construction of these facilities focuses on the construction methods and a scheduling that permits uninterrupted LIRR traffic. Until the third track with reverse signaling is operational, LIRR operations will require four tracks (2 on Atlantic and 2 on Montauk) at peak hours and two tracks in off-peak hours with provision that a third track is available in the eventuality of an emergency. An analysis was made to establish the feasibility, economy and duration of construction of Alternative 2 by:

- Schedule 1 Advancing simultaneous construction of the third track on the LIRR Montauk Division and Route 131-D on the Atlantic Branch while maintaining LIRR traffic on both lines, and
- Schedule 2 Constructing first the LIRR third track on the

 Montauk Division while maintaining adjacent traffic
 and thence upon completion of this construction
 and once this line is operational, constructing

 Section 131-D free of traffic.

Refer to Tables 5-A and 5-C for estimated cost and schedule for Schedule 1 and Tables 5-B and 5-D for Schedule 2.

The characteristics of simultaneous construction Schedule 1 are as follows:

1) Off-peak hours construction of 131-D essentially limited to between the hours of 9:45 A.M. to 4:00 P.M. and from 7:30 P.M. to 5:00 A.M. requires meticulous and intricate procedures which materially affect cost and time. Moreover, even though off-peak hours are scheduled for construction, the Contractor must be prepared to permit



occurring on the Montauk line. Coordination of construction between the third track construction and 131-D construction must be effected to insure that LIRR operations are uninterrupted.

Due to the residential character of the community, it will be very difficult to take advantage of the nighttime hours of 7:30 P.M. to 5:00 A.M.

2) Temporary structures will be required for the construction of portions of Route 131-D, particularly at station sites. The temporary structures themselves will require a staged procedure as will the station structure. The station structure must be designed with these temporary structures as constraints. Note also the complex staging and structures required for crossing 131-D under LIRR tracks at South Road.

By staging construction of 131-D after the third track is operational on the Montauk Division (Schedule 2), the constraints noted above are either eliminated or greatly alleviated:

- Construction of 131-D will not be impeded by maintenance of traffic and normal working hours may be employed.
- Temporary structures will essentially not be required.
 The need for lengthy staged construction of stations will be eliminated.
- 3. The construction and installation of power, communications and signals, track and reconstruction or modification of bridges on the Atlantic Branch will be greatly facilitated when not encumbered by maintenance of traffic or staged construction.



Simultaneous construction (Schedule 1) resulting in obviously higher construction costs without a savings in time is therefore eliminated herein from further consideration.

Schedule 2 - Montauk Third Track Construction

As noted in the Table, the third track construction may be scheduled under 5 contracts: Mainline (from Jamaica Station to Jamaica Viaduct),

Jamaica Viaduct, Montauk Branch area, Trackwork, and Linework. The first three contract items consist of all Civil work; i.e., structures, embankment, roadbed, drainage, etc., complete preparatory to placing of track and linework.

Construction may be begun in all areas except the mainline area in the proximity of Jamaica Station where stage construction is required once the third track is operational beyond the undercrossing structures. Once the third track is available beyond this point, the undercrossing may be replaced by bridge to support the new track alignment. This will require complex stage construction.

The Jamaica Viaduct is an isolated section that may be constructed to coincide with the completion of the Montauk Branch area construction.

The Montauk Branch area contract requires the staging of all work to maintain two tracks. Temporary relocation of track and linework will be required to construct structures and demolish existing stations.

Schedule 2 - NYCTA - 131-D Atlantic Branch Construction

This construction is separated into 4 contracts: Stations, Civil Work, Trackwork and Linework. Once the third track is operational on the Montauk Division, construction may be begun on all phases. The track and linework may begin in areas not materially affected by structures and scheduled such that this work may proceed onto structures as they are completed.



CONSTRUCTION COSTS

Estimated construction costs applied to the various alternates contained in this report are based on January 1, 1975 unit prices and construction costs for the New York City area. Cost estimates were prepared for both Alternatives 1 and 2. The estimate for Alternative 1 includes increased costs due to the restrictive work schedules and complex construction associated with the maintenance of LIRR traffic during the construction of the NYCTA facilities.

Costs for both alternatives were separated into their component parts: civil work, stations, walls, bridges and other structures, trackwork, power, signals, and communications. Civil Work includes the cost of embankment (cut, fill, and borrow excavation as required), fencing, utility work, drainage, and removal of existing facilities where required. Stations include the construction of the buildings, platforms, all HVAC equipment and all equipment for operation such as turnstiles, escalators, and elevators. Walls include all retaining walls constructed. Bridges and Other Structures include all of the bridgework, either renovation or new construction; all service area structures, such as car washers and cleaners, and their necessary associated equipment; all temporary track structures required for detours and run-arounds; all cut and cover tunnel construction; and all the structural work associated with the construction of new power substations. Trackwork includes all roadbed work, ties, and rail construction except for the installation of the third rail, which is contained within the power system.

The Atlantic Branch was subdivided into five areas: South Road through Illth Avenue, Illth Avenue through Foch Boulevard, Foch Boulevard through Farmers Boulevard, Farmers Boulevard through Springfield Boulevard, and storage areas. The Montauk Branch was divided into four areas: Mainline,



Boulevard through North Conduit Avenue. This subdivision facilitates

the cost estimating of various alternates and schedules. Tables 4-B and

4-C found in Section 4 of this report, show the estimated construction cost

by areas of the recommended alternative for the Atlantic Branch and Montauk

Branch, respectively. Table 5-B shows the same construction costs by contract.

Tables 5-A and 5-C show the estimated construction costs for Construction

Schedule 1 (simultaneous construction) for the recommended Alternative 2.

Tables 5-B and 5-D show the estimated construction costs for Construction

Schedule 2 (staggered construction) for the recommended Alternative 2.

The estimated construction cost of the recommended Alternative 2 is \$134.6 million. The estimated construction of Route 131-D on the Atlantic Branch is \$70 million and \$64.6 million for the Montauk Division.

These estimates reflect the increased costs of construction while maintaining traffic for the third track construction on the Montauk Division. These costs account for short work days, difficulty of moving materials in restrictive areas, flagmen, etc. Note that Schedule 1 is approximately 10 percent higher in cost principally due to the effect of constructing Route 131-D under traffic.

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ALTERNATIVE-2

ESTIMATED CONSTRUCTION COST (FOR CONSTR. SCHEDULE 1)
SIMULTANEOUS CONSTR. OF ROUTE 131-D ON ATLANTIC BRANCH
3RD TRACK ON MONTAUK BRANCH
(MILLIONS)

	_	,			_			-			
REMARKS	INCLUDES 4 STATIONS	INCLUDES 7 BRIDGES, 3 SUBSTATIONS, I SERVICE AREA AND 11,000 L.F. WALLS	INCLUDES 47,000 L.F. NEW TRACK & 20,000 L.F. EXIST. TRACK REJUVENATION	INCLUDES POWER, SIGNALS & COMM.	AT 6/77 PRICES	INCLUDES 2 BRIDGES & BACKFILLING OF OLD SOUTHERN UNDERCROSSING	INCLUDES 540 L.F. APPROACH WALL & I,920 L.F. VIADUCT	INCLUDES 10 BRIDGES, REMOVAL OF 2 STATIONS AND 10,600 L.F. WALLS	INCLUDES 19,500 L.F. NEW TRACK & 29,000 L.F. RELOCATED TRACK	INCLUDES POWER, SIGNALS & COMM.	AT 6/77 PRICES
\$ COST	1.91	24.4	5.9	35.0	81.4	2.8	5.0	20.8	16.1	6.61	64.6
CONTRACT	I. STATIONS	2. CIVIL WORK	3. TRACK WORK	4. LINE WORK	\$ SUB-TOTAL	I. MAIN LINE	2. JAMAICA VIADUCT	3. MONTAUK BRANCH	4. TRACK WORK & FLAG.	5. LINE WORK	\$ SUB-TOTAL
		BBANCH		JOЯ UTA		NCH	NK BBA	AA ON/ ATNOM	INE & C ISF	וא ר ר0א	ΑM

SUMMARY (MILLIONS)

Г	Т	Г
81,4	64.6	146.6
BRANCH	BRANCH	
ON ATLANTIC	MONTAUK	
ROUTE 131-D ON /	MAINLINE & MONTAUK	TOTAL
ROUTE	LIRR	69



ALTERNATIVE - 2

ESTIMATED CONSTRUCTION COST (FOR CONSTR. SCHEDULE 2)
CONSTRUCTION OF ROUTE 131-D ON ATLANTIC BRANCH
AFTER MONTAUK 3RD TRACK IS OPERATIONAL

٢												
(MILLIONS)	REMARKS	INCLUDES 4 STATIONS	INCLUDES 7 BRIDGES, 3 SUBSTATIONS, I SERVICE AREA AND 11,000 L.F. WALLS	INCLUDES 47,000 L.F. NEW TRACK & 20,000 L.F. EXIST. TRACK REJUVENATION	INCLUDES POWER, SIGNALS & COMM.	AT 6/77 PRICES	INCLUDES 2 BRIDGES & BACKFILLING OF OLD SOUTHERN UNDERCROSSING	INCLUDES 540 L.F. APPROACH WALL & I,920 L.F. VIADUCT	INCLUDES 10 BRIDGES, REMOVAL OF 2 STATIONS & 10,600 L.F. WALLS	INCLUDES 19,500 L.F. NEW TRACK & 29,000 L.F. RELOCATED TRACK	INCLUDES POWER, SIGNALS & COMM.	AT 6/77 PRICES
	\$ COST	13.7	21.7	5.3	29.3	70.0	2.8	5.0	20.8	16.1	19.9	64.6
	CONTRACT	I. STATIONS	2. CIVIL WORK	3. TRACK WORK	4. LINE WORK	\$ SUB-TOTAL	I. MAIN LINE	2. JAMAICA VIADUCT	3. MONTAUK BRANCH	4. TRACKWORK 8. FLAGGING	5. LINE WORK	\$ SUB-TOTAL
		,	HONA?		TUO?			NILROAD		TINE 8	INIY TOI	√W

SUMMARY (MILLIONS)

_		
70.0	64.6	134.6
BRANCH	BRANCH	
ATLANTIC	MONTAUK	TOTAL
ROUTE 131-D ON	MAINLINE & 1	\$ TO.
ROUTE	LIRR M	



ALTERNATIVE - 2
CONSTRUCTION SCHEDULE

	L		CONSTRUCTION SCHEDOLE I	
			LIRR MAINLINE AND MONTAGE BRANCH	
			YEARS	
	CONTRACT		0 1 2 3 4 5	6 7 8
	I. MAIN LINE AREA		- START OF CONSTR MONTAUK 3RD TRACK OPER.	
2	JAMAICA VIADUCT		2 YEARS	
w.	MONTAUK BRANCH AREA		2 YEARS	
4	TRACK WORK		3 YEARS 3 MONTHS	
J.	LINE WORK		3 YEARS'3 MONTHS	
	NYCTA	- AT	11	Ŧ
	STATIONS		3 YEARS 6 MONTHS	
2	. CIVIL WORK		3 YEARS	
м.	. TRACK WORK		2 YEARS 9 MONTHS	
4	. LINE WORK		3 YEARS	
T				

TABLE 5C

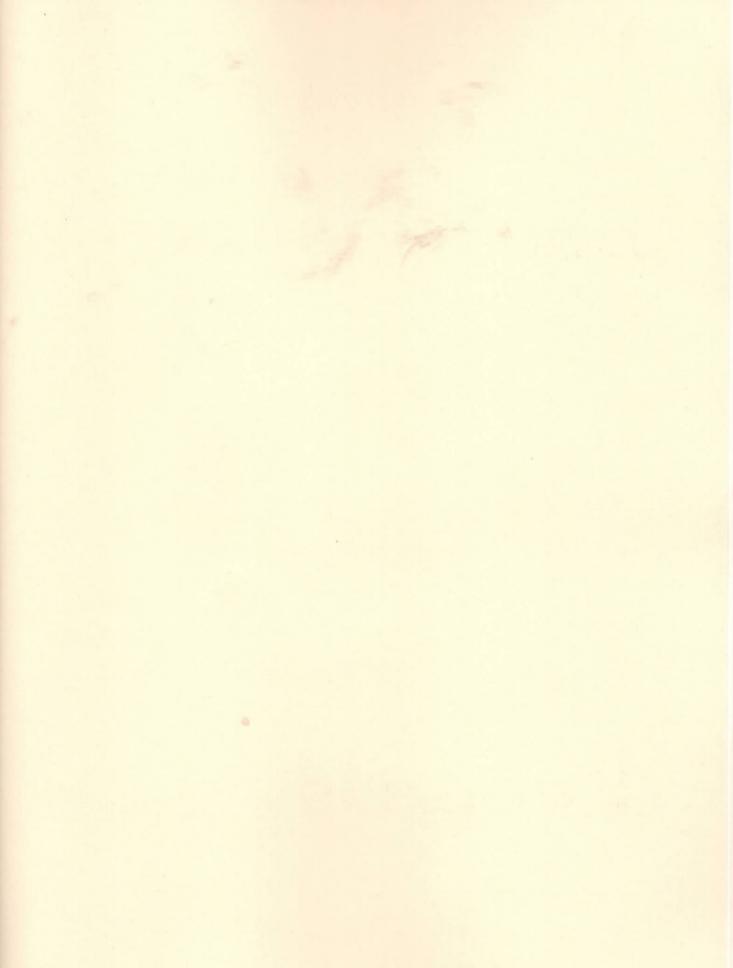


9 - SOUTHEAST QUEENS LINE VIA ATLANTIC BRANCH LIRR MAINLINE AND MONTAUK BRANCH CONSTRUCTION SCHEDULE ALTERNATIVE - 2 2 ■ MÖNTAUK 3RD TRACK OPER. 2 YEARS 3 MONTHS YEARS 4 I YEAR 9 MONTHS 2 YEARS 3 MONTHS M 2 YEARS 2 YEARS START OF CONSTR. 2 2 YEARS 2 YEARS 3 YEARS 3 MONTHS 3 YEARS 3 MONTHS 131 D ROUTE NYCTA JAMAICA VIADUCT I. MAIN LINE AREA MONTAUK BRANCH TRACK WORK CIVIL WORK TRACK WORK LINE WORK LINE WORK CONTRACT STATIONS AREA 2 3 4 2 3 5 4



SECTION 6

ADDITIONAL ALTERNATIVES STUDIED



SECTION 6 - ADDITIONAL ALTERNATIVES STUDIED

MENTAUK BRANCH ALTERNATIVES

Allternative 2A - LIRR Third Track on South Side of Montauk Branch.

Alternative 2A was developed from the operational plan of the Long

Island Railroad which places the proposed third track of the Montauk Branch

In the south side of the existing tracks with the existing stations removed.

This alternative utilizes the same alignment as Alternative 2 from the Jamaica Station to the Jamaica Viaduct. Proceeding down the Montauk Branch from the Jamaica Viaduct, the existing tracks generally remain in their existing position to the St. Alban's Station area, where removal of this station emables the track alignment to be straightened. The proposed third track is located south of the existing tracks and generally parallels their alignment. A new retaining wall is required along the south right-of-way from Brinkerhoff Avenue to Linden Boulevard, a distance of approximately 3,400 feet. Even with the use of this wall, the required horizontal clearances dictate that an additional 1.5 feet of right-of-way be taken from 18 properties, as well as necessitating a construction easement for a portion of the length of the wall. The construction of this wall is also complicated by the close proximity of the existing tracks, which must be supported during construction. The estimated cost of this wall is \$2,550,000. In addition to this, all of the existing LIRR communication and signal facilities are located on the south side and would be in conflict with the third track construction.

The existing north track is maintained from the St. Alban's Station area to the beginning of the long 2-degree curve over 141st Avenue, 225th Street, and North Conduit Avenue. The other existing track is maintained



the alignment of this track can be straightened with the existing Springfield Gardens Station. The proposed third constructed on the south side in this area and again parallels assume alignment. New retaining walls are required all along the side from Linden Boulevard to 141st Avenue to support embankment are proposed third track.

The existing Montauk Branch and the existing two-track Atlantic Branch print over North Conduit Avenue to form a four-track facility which continues to the Nassau County. With this alternative, the northern three tracks would connect to the three Montauk tracks; the remaining track and Rosedale Station would be abandoned. The long tangent paralleling Sunrise Highway is fixed in its present position because of the existing bridges and right-of-way. The tangent west of 141st Avenue is also fixed by existing facilities. The position of the 2°-00' curve between these two tangents is fixed and can only be varied slightly by adjusting the lengths of spiral. The maximum shift of the existing north track from its existing position would be almost 50 feet.

Major modifications to three bridges and extensive retaining wall construction along the north side between 225th Street and Laurelton Parkway would be required. The 2°-00' curve conforms to that proposed by the LIRR on their operating plan and results in a design speed of 78 mph.

This alternative requires additional right-of-way involving 30 private properties adjacent to the right-of-way on the south side. This alternative also has a direct impact on an additional 253 residents due to the construction of retaining walls immediately adjacent to their properties. The previously mentioned conflict with the existing signals system on the south results in construction problems and higher costs. Implementation of this scheme requires the construction of additional embankment, retaining walls, and



bridges over those required in Alternative 2. Alternative 2A retaining walls and bridges are estimated to cost \$2 million and \$2.8 million more, respectively, than those required in Alternative 2 --- the recommended alternative. Also, Civil Work is estimated to cost \$1.8 million more than the recommended alternative. Therefore, Alternative 2A was rejected as the recommended alternative for the construction of the proposed third track on the Montauk Branch. Plan, profile, and sections of this alternative are not contained in this report.

Alternative 2B - LIRR Third Track on Montauk Branch with Existing Stations Rebuilt

The LIRR has expressed a willingness to eliminate passenger stations at St. Albans and Springfield Gardens on the Montauk Branch. Patronage at these two stations is practically non-existent with present passenger use of 87 at St. Albans and 8 at Springfield Gardens for the peak three-hour period. This alternative with station rebuilt was studied to provide a basis of comparison with Alternatives 2 and 2A which do not provide passenger stations along the Montauk Branch.

The operating plans developed for this alternative provide station platforms to serve all three proposed tracks at the two station locations. Modifications to these stations include the extension of the existing platforms to provide for 12-car trains, construction of a new side platform, and provisions for the handicapped.

In general, this Alternative 2B has similar alignment to Alternative 2A from Jamaica Station to the approach to St. Albans Station, between St. Albans Station and Springfield Gardens Station and beyond Springfield Gardens Station.

The study of Alternative 2B revealed that to rebuild the two stations to present-day LIRR criteria would involve large additional construction costs, considerable track relocation, and much right-of-way acquisition.



Therefore, since people are not presently using these stations and since the proposed NYCTA facility on the Atlantic Branch will provide a more flexible transit service to the area, this Alternative 2B is not being recommended. Plan, profile, and sections of this alternative are not contained in this report.



MELANTON BRANCH ALTERNATIVES

- Linden Boulevard Station Location

The recommended alternative, described previously in Alternative 2, the station entrance in the northeast quadrant bounded by Linden

The recommended and the Atlantic Branch right-of-way.

The recommended alternative, described previously in Alternative 2, the station entrance in the northeast quadrant bounded by Linden

The recommended alternative, described previously in Alternative 2, the station entrance in the southwest quadrant, the station entrance in the southwest quadrant, the station of Meyer Avenue along Bedell Street. (See Figure 5-5 section 5).

This station alternative utilizes side platforms with third point loading. It is necessary to take the entire block of properties bordered by Meyer Avenue, Bedell Street, Linden Boulevard and the Atlantic Branch right-of-way for construction of the station and its immediate entrance. The triangular block immediately south of the station should also be acquired and the Bedell Street-Meyer Avenue connection would be used as a bus and car turn-around for station access. The advantages of this alternative are that bridge modifications and new retaining wall construction are not required. The existing track alignment can be maintained to fit the existing thru-girder bridges at both lllth Avenue and Linden Boulevard.

This alternative was not recommended because it required the acquisition of an excessive amount of property. The proposed turn-around is not spacious enough to accommodate peak-hour traffic, and the resultant movement back onto Linden Boulevard would be difficult.



Baisley/Farmers Storage Facilities

at Farmers Boulevard which was described in Alternative 2. This terrative utilizes a depressed or underground storage and maintenance yard, removing the area from sight of the surrounding residential area.

Under this alternative, the proposed NYCTA siding track proceeding

westward from Springfield Boulevard crosses Farmers Boulevard at the same grade

the main EB and WB tracks. Immediately west of Farmers Boulevard, the

siding track descends to the proposed storage area, requiring that a large

grade separation retaining wall be constructed to separate it from the main

MYCTA tracks. When the siding reaches the proposed storage area at

Elevation 103±, it branches into a lead to the collector system at the center

of the storage area or straight into the car wash and car cleaner facilities.

Train movement is inefficient: in order for a train to be stored in the east

section of the facility, it must proceed through the collector system up a

track constantly kept open for reversing direction and then the train may

proceed to the storage tracks. Total train storage capacity is similar to the

recommended alternative. Large retaining walls must be constructed all around
the area and considerable excavation is required.

This alternative was not recommended due to the high costs involved in construction and the resulting inefficient train movement.

Storage Area Alternative Adjacent to South Road

The possibility of utilizing the existing wide swath of right-of-way located between South Road and 108th Avenue as a storage area was studied as a possible addition to Alternative 2, single NYCTA occupancy of the Atlantic Branch. Two possible storage alternatives for this area were studied.



One alternative involved the construction of five sidings on retained embankment off a lead track from the westbound NYCTA track. Access from the eastbound NYCTA track and turn-around capability was provided by a crossover placed east of 108th Avenue. The existing LIRR Old Southern Viaduct, which connects the Atlantic Branch to the Mainline, would be removed. The total storage capacity for this alternative is five trains.

The second alternative also utilized five sidings on retained embankment with lead-in facilities identical to the first. The five sidings connect into a collector track that connects to the Old Southern Viaduct, which is to be used for storage in this alternative. Four trains are stored on the viaduct and four on the retained embankment, leaving one siding open for access. Eight trains are stored in this alternative.

Neither of these alternatives were incorporated into the recommended alternative for storage for the following reasons:

- Operational characteristics are not good. Train movements in and out of the storage area are one directional to the east and the movements conflict with main track movements through 108th-109th Avenue Station. The storage requirements for this route are better served closer to the terminal station at Springfield Boulevard.
- 2. The storage area is very close to York College now under construction and the existing Old Southern Viaduct occupies the possible site for a proposed new Queens Hospital. The viaduct presents a barrier to the planned redevelopment. The office of Jamaica Planning and Development has recommended that the two sites---York College and Queens Hospital---be directly linked to provide joint use of facilities.



 Continuing maintenance of the viaduct, built in 1913, would be required.

Based on the above reasons, it was determined that the required storage of 33 8-car trains for this portion of Route 131-D will be better accommodated adjacent to Farmers Boulevard and beyond the terminal station at Springfield Boulevard as recommended in Alternative 2. Plan, profile, and sections of this alternative are not contained in this report.

Underground Alternative for Route 131-D on Atlantic Branch

A variation of Alternative 2 placing the entire NYCTA Atlantic Branch facility underground within a cut and cover structure was considered. The construction of this alternative would be most beneficial to the area in that the existing LIRR Atlantic Branch facilities would be removed, thereby eliminating the existing barrier which bisects the area. Upon development of this alternative, it was apparent that construction costs would be exorbitant——the costs for Route 131-D would be more than double the costs of an above—ground facility. Due to excessive costs, further development of this alternative was not considered feasible. Plan, profile, and sections of this alternative are not contained in this report.

Rosedale Station Alternatives 2C & 2F

Alternatives for the possibility of continuing service to the Rosedale Station by the NYCTA or the LIRR were studied. Because Rosedale Station presently accommodates 1080 passengers at the peak three-hour period, it was necessary to deal with this problem in detail. Three different alternatives were developed: temporary LIRR service; permanent LIRR service; and permanent NYCTA service.



Temporary LIRR service to Rosedale is described under Alternative 2 in

4 and forms a part of the recommended alternative. In summary, it is

mended that the LIRR maintain temporary service to Rosedale Station

an additional side platform on the north side until Route 131-D is

operational. At that time, service to this area would be provided at

131-D terminal station, Springfield Boulevard.

The second alternative considered was for permanent LIRR service to Rosedale Station. This alternative requires rebuilding the existing station to meet present LIRR Station criteria which includes provisions for the handicapped, and for platforms to accommodate 12-car trains. Alignment-wise, this could be accomplished by keeping the three existing southerly tracks in their present location and abandoning the northernmost track. A two-platform station is envisioned under this alternative (north to south - side platform/track/track/island platform/track). This island platform would occupy the same position as the existing platform.

The third alternative considered the provision of permanent service to Rosedale as provided by the NYCTA. Under this alternative, the NYCTA storage yard remains east of the Springfield Boulevard Station and adjacent to Farmers Boulevard. Two NYCTA storage tracks will have to be used as revenue tracks to service the Rosedale Station. The new platform width necessitates the shifting of the eastbound track to the south, requiring widening of the bridge over the Francis Lewis Boulevard. The proximity of the City Line makes it possible to store only four NYCTA trains beyond the terminal Rosedale Station. The existing LIRR system in this area consists of four tracks, two of which serve the existing Rosedale Station. In order to provide three LIRR tracks and two NYCTA tracks and to provide 18'-6" c/c tracks (adjacent tracks between the two systems) it is necessary to shift the existing tracks northward and add a track on the south to fit the restricted right-of-way corridor.



North Conduit Avenue, Laurelton Parkway, Brookville Boulevard,

Lewis Boulevard. These bridges must be constructed while

LIRR traffic. In addition, this alternative requires about 6,900

retaining wall, extensive new trackwork and revisions to the LIRR

signals, and communications as well as new power, signals and

In summary, temporary LIRR service to Rosedale, the recommended alternative requires no alterations to existing facilities except the addition of crossovers and a temporary side platform. Permanent LIRR service to Rosedale entails the construction of a new station and platform to meet present operational requirements, such as platform lengths to accommodate 12-car trains. Permanent NYCTA service to Rosedale requires very costly and extensive additions to four bridges while maintaining traffic, 6,900 L.F. of new retaining wall, extensive track relocation, new NYCTA track, new NYCTA station and platform and revisions to and new construction of power, signals, and communications for the LIRR and NYCTA lines, respectively.

Plan, profile, and section for this alternative are not contained in this report.



SECTION 7

CONCLUSIONS AND RECOMMENDATIONS



SECTION 7 - CONCLUSIONS AND RECOMMENDATIONS

- The need for increased public transit service for the project area recognized in recent land use plans. The recommendation that the recognized in Southeast Railroad be used to implement NYCTA resit services in Southeast Queens is contained in two recent planning recognized for city agencies (Page 2-2).
- 2. The existing land use pattern emphasizes public services and pattern and industrial activities that require convenient transportation access to be successful. Implementation of the project area's development policies, housing policies, and the improvement of existing residential meighborhoods would be realized by providing rail transit service (Pages 2-4 to 2-5).
- 3. Major concentrations of population exist within the project area which are not provided with direct, rail transit service. These concentrations have a populace of low incomes, high unemployment, elderly persons, and large labor forces. It is recommended that convenient rail transit service be provided to serve these areas to improve the mobility of the population and to improve accessibility from these areas to major local and metropolitan economic and cultural areas (Page 2-15).
- 4. LIRR service presently provided to St. Albans, Springfield Gardens, and Locust Manor Stations are lightly patronized because of significant cost differential between alternate modes of transportation and the necessity to transfer to another mode for access to many CBD areas (Page 2-15).
- 5. There is a definite need for the construction of the proposed Section 6 of Route 131-D, which will offer a single fare system to far-flung areas of the city. Current planning for the Jamaica area is predicated on



the construction of an NYCTA Transit facility. (Page 2-15).

- 6. The location of passenger stations along the proposed line is predicated on passenger access to the stations. After considering bus access, pedestrian access, projected station patronage, location of possible future parking areas, and the operational characteristics of the line, proposed station sites were selected at 108th and 109th Avenues, Linden Boulevard, Baisley Boulevard, and Springfield Boulevard (Page 3-1).
- 7. At those stations with a large park-and-ride potential, it is recommended that park-and-ride facilities be promoted. (Page 3-1).
- 8. The 108th-109th Avenue Station has been projected as primarily a pedestrian station with a 1985 peak hour volume of 1200. This station location has been recommended by the Office of Jamaica Planning and Development. The redevelopment program now underway will result in a predicted patronage increase of 34 percent over the above projection. (Page 3-3 and 3-4).
- 9. Linden Boulevard is a prime station site because it affords excellent bus service for the projected patronage. The estimated patronage for 1985 peak hour is 3800, of which 800 will walk, 600 will park-and-ride, and 2400 will use public bus. It is recommended that Linden Boulevard be widened to 64 feet between curbs in the station area to provide two bus loading lanes. An important asset of this station location is the direct street route that exists between the station and the St. Albans Naval Hospital area. (Pages 3-4 to 3-6).
- 10. The Baisley Boulevard Station is ideally located for pedestrian access from Rochdale Village Apartments containing 25,000 people. The 1985 peak hour patronage is estimated at 2750; 1200 will walk, 1200 will arrive by bus, and 350 will be park-and-ride patrons. It is recommended that the existing east bridge abutment be moved back to the property line



These 3-6 to 3-7).

Springfield Boulevard Station is recommended to be the terminal for Route 131-D. Coombs Street and 141st Avenue should be paved webicular access to the station. Pedestrian crosswalks are medical across Springfield Boulevard. Every effort should be made to the appropriate agencies to acquire additional property to provide the development of off-street parking at this site. Signalization the required on Springfield Boulevard at both the station drive and Avenue. Important reasons for the selection of this location for the terminal station are:

- (1) The access road to the station, Springfield Boulevard, is a 4-lane highway capable of handling large volumes of traffic.
- (2) The storage of trains is behind the station, which provides for optimum storage and separate traffic operations for storage and revenue tracks.
- (3) Vacant land is available for parking facilities as well as for maneuvers by the anticipated car and bus traffic.
 - (4) High patronage is projected from a large population surrounding the station area and beyond. (Pages 3-8 to 3-11)
- Phase 1 Report prepared by the NYCTA. The basic operating scheme is for two LIRR tracks to share the existing LIRR Atlantic Branch right-of-way with two NYCTA tracks from the intersection of the two lines east of South Road to the terminus of the line at Springfield Boulevard. (Page 4-1).



- 13. The main premise of Alternative 2 is to relocate the LIRR to the Montauk Branch by providing a third track and a reverse-signaling system. Once the Atlantic Branch is vacated by the LIRR, Route 131-D, Section 6 can be constructed as a NYCTA two-track system, making use of the major part of the existing track and alignment. (Page 4-9).
- 14. The comparison of Alternatives 1 and 2 shows that Alternative 2, with single NYCTA occupancy of the Atlantic Branch, provides the best solution for the extension of rapid transit rail service to the area. Although both alternatives provide the necessary transit facilities, fulfill the NYCTA storage and maintenance requirements, and provide uninterrupted LIRR service, Alternative 2 results in the most economical solution with less disruption to the community, and, through separation of the lines, streamlines both operations. (Page 4-19).
- 15. The proposed stations for Alternative 2 will consist of two-level, above ground structures with spaciousness as a major design feature. Side platforms will be used at the 108th-109th Avenue, Linden Boulevard, and Baisley Boulevard Stations. An island platform will be used for the terminal station at Springfield Boulevard. (Pages 5-1 to 5-6).
- Montauk Branches requires the widening and/or modification of 7 of 13 existing bridges on the Atlantic Branch and 12 of 21 existing bridges located on the Mainline and Montauk Branch. The bridge loading criteria for the NYCTA and LIRR, when compared, show that the existing LIRR bridges that are to be used for Route 131-D without modification are more than adequate; these bridges are capable of carrying 25 percent more load than will be required. (Pages 5-7 to 5-10).



- 17. No major utility relocations are required for the construction of Alternative 2. Utility service must be provided for the proposed car wash and cleaning platforms and protective measures are required for a 60-inch sanitary sewer and a 48-inch storm sewer. (Page 5-11).
- 18. Three different types of track construction will be required for Alternative 2: New track (new system on new alignment); rehabilitated track (on existing LIRR alignment); and construction of new yard track. (Page 5-12).
- 19. New electrification facilities will be provided for the NYCTA tracks. Three new traction power substations will be required for the route. It is recommended that consideration be given to the use of the existing LIRR third rail by the NYCTA. (Pages 5-13 to 5-16).
- 20. A new signaling system will be provided for the NYCTA tracks. This system will be compatible with existing NYCTA systems so that train operation and operating procedures will be the same for all lines. (Page 5-17).
- 21. Construction of Alternative 2 affects a total of 21 properties along the Atlantic Branch and one property along the Montauk Branch.

 (Page 5-21).
- 22. As a result of this project, generated noise along the Atlantic Branch will be reduced through the elimination of LIRR facilities and the subsequent replacement with NYCTA facilities. The NYCTA system generates less noise by itself, and the implementation of the noise-reducing measures previously discussed further reduces community impact. The increase in passenger train movements on the Montauk Branch will not necessarily increase noise intensity. Due to the removal of stations, station noise and noise



- by braking and acceleration of trains through the existing curved approaches will be eliminated. Wheel-to-rail noise will be reduced as the adoption of continuous-welded rail. (Page 5-31).
- Two construction schedules were considered for Route 131-D.

 Schedule 1 involves simultaneous construction of the third track on the

 Montauk Branch and Route 131-D on the Atlantic Branch while maintaining

 traffic on both lines. Schedule 2 involves constructing the LIRR third

 track on the Montauk Branch while maintaining adjacent traffic. Once

 this line is operational, Section 131-D is then constructed free of traffic.

 Construction Schedule 2 results in lower construction costs and equal

 construction time, and is therefore recommended for adoption. (Pages 5-32

 to 5-34).
- 24. The estimated total construction cost of the recommended

 Alternative 2 is \$134.6 million consisting of \$70 million for Route 131-D

 on the Atlantic Branch, and \$64.6 million for the Montauk Branch. These
 estimates reflect the increased costs of construction while maintaining

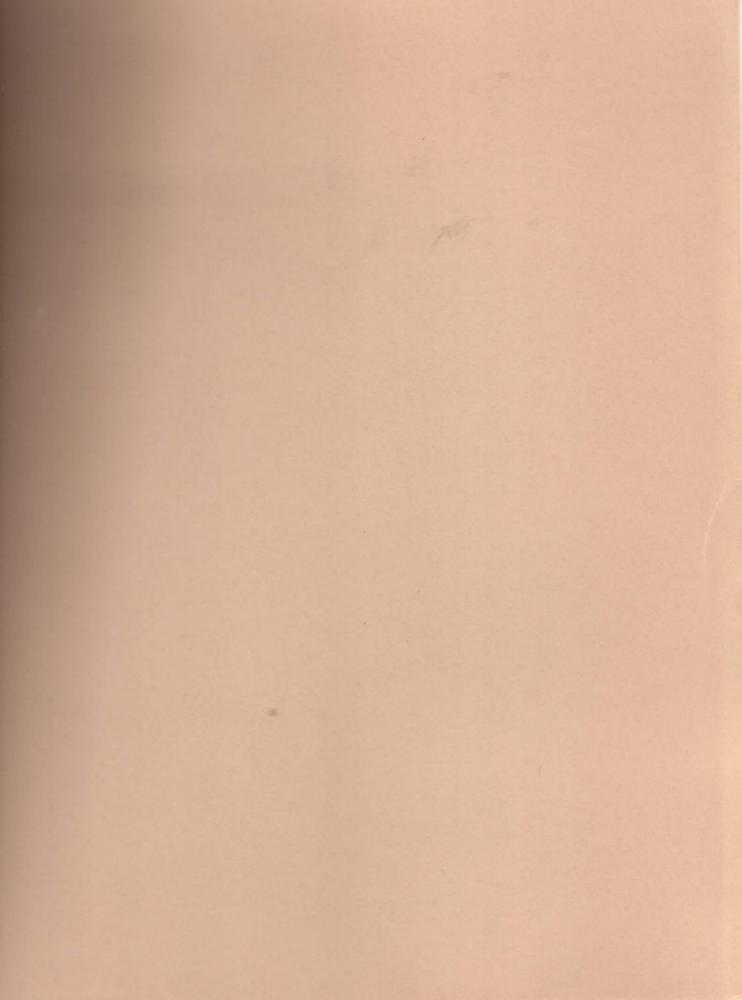
 traffic during the third track construction of the Montauk Branch.

 (Page 5-36).
- 25. It is recommended that the LIRR maintain temporary service to Rosedale Station until Route 131-D is operational. At that time, service to this area would then be provided at the Route 131-D terminal station, Springfield Boulevard. (Page 6-9).









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